NUS CORPORATION
19 CROSBY DRIVE
BEDFORD, MASSACHUSETTS 01730
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C-583-1-1-253
February 6, 1991

Final Screening Site Inspection
James River Inc. Mill No. 8
Fitchburg, Massachusetts

TDD No. F1-9002-12
Reference No. $375MAM1I$
CERCLIS No. MAD065777344

INTRODUCTION

The NUS Field Investigation Team (NUS/FIT) was requested by the Region 1 U.S. Environmental Protection Agency (EPA) Waste Management Division to perform a Screening Site Inspection of James River Inc. Mill No. 8 in Fitchburg, Massachusetts. All tasks were conducted in accordance with Technical Directive Document (TDD) No. F1-9002-12, which was issued to NUS/FIT on February 19, 1990. The Massachusetts Department of Environmental Quality Engineering (MA DEQE) and the U.S. EPA performed Preliminary Assessments of this property on June 1, 1987 and July 20, 1981, respectively. On the basis of the information provided in these Preliminary Assessments, the James River Inc. Mill No. 8 Screening Site Inspection was initiated.

Background information used in the generation of this report was obtained through file searches conducted at the Massachusetts Department of Environmental Protection (MA DEP) and at the EPA. Information was also collected during an NUS/FIT site reconnaissance on July 11, 1990.

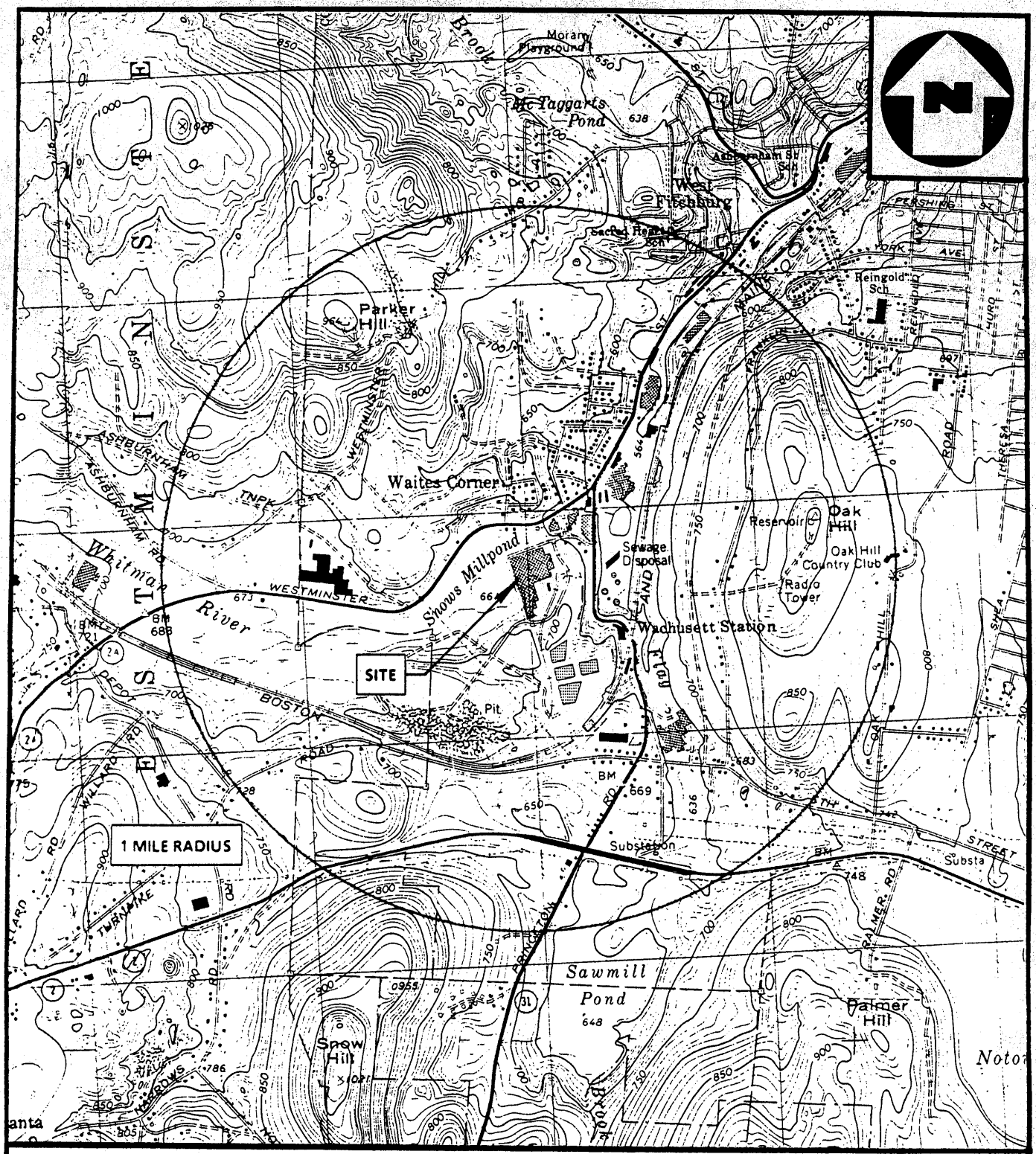
This package follows guidelines developed under the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, commonly referred to as Superfund. However, these documents do not necessarily fulfill the requirements of other EPA regulations such as those under the Resource Conservation and Recovery Act (RCRA) or other federal, state, or local regulations. Screening Site Inspections are intended to provide a preliminary screening of sites to facilitate EPA's assignment of site priorities. They are limited efforts and are not intended to supersede more detailed investigations.

SITE DESCRIPTION

James River Inc. Mill No. 8 is located off Route 31, Old Princeton Road in Fitchburg, Worcester County, Massachusetts (Latitude 42 degrees, 37 minutes, 36.2 seconds; Longitude 71 degrees, 51 minutes, 20 seconds), on a 98.7-acre parcel of land (Figure 1). The facility, currently owned by the James River Corporation, manufactured paper, and closed on June 1, 1990. On August 17, 1990, the James River Corporation announced the signing of a letter of intent with a New York investment group to sell it's specialty products division, which includes the Fitchburg facility. Operations at Mill No. 8 have ceased for approximately one year, until the restructuring is complete (Koszalka,1990a; The Lowell Sun, 1990).

There are two buildings on the property: the Mill, and a pre-fabricated metal building, located approximately 1000 feet to the east of the Mill, which houses the Papermaking/Engineering Division of James River Inc. Mill No. 8. There is fencing and a lockable gate on a paved access road that prevents vehicular access to Mill No. 8, and another lockable gate approximately 100 feet to the northwest of the Papermaking/Engineering Division, where the road becomes dirt (Figure 2) (NUS/FIT, 1990).

Table 1 includes all identified and potential source areas of contamination, containment features, and also spatial locations on the James River Inc. Mill No. 8 property:



BASE MAP IS A PORTION OF THE FOLLOWING 7.5' U.S.G.S. QUADRANGLE(S):
FITCHBURG, MASS., 1969, PHOTOREVISED 1979; GARDNER, MASS., 1970, PHOTOREVISED 1979

1 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

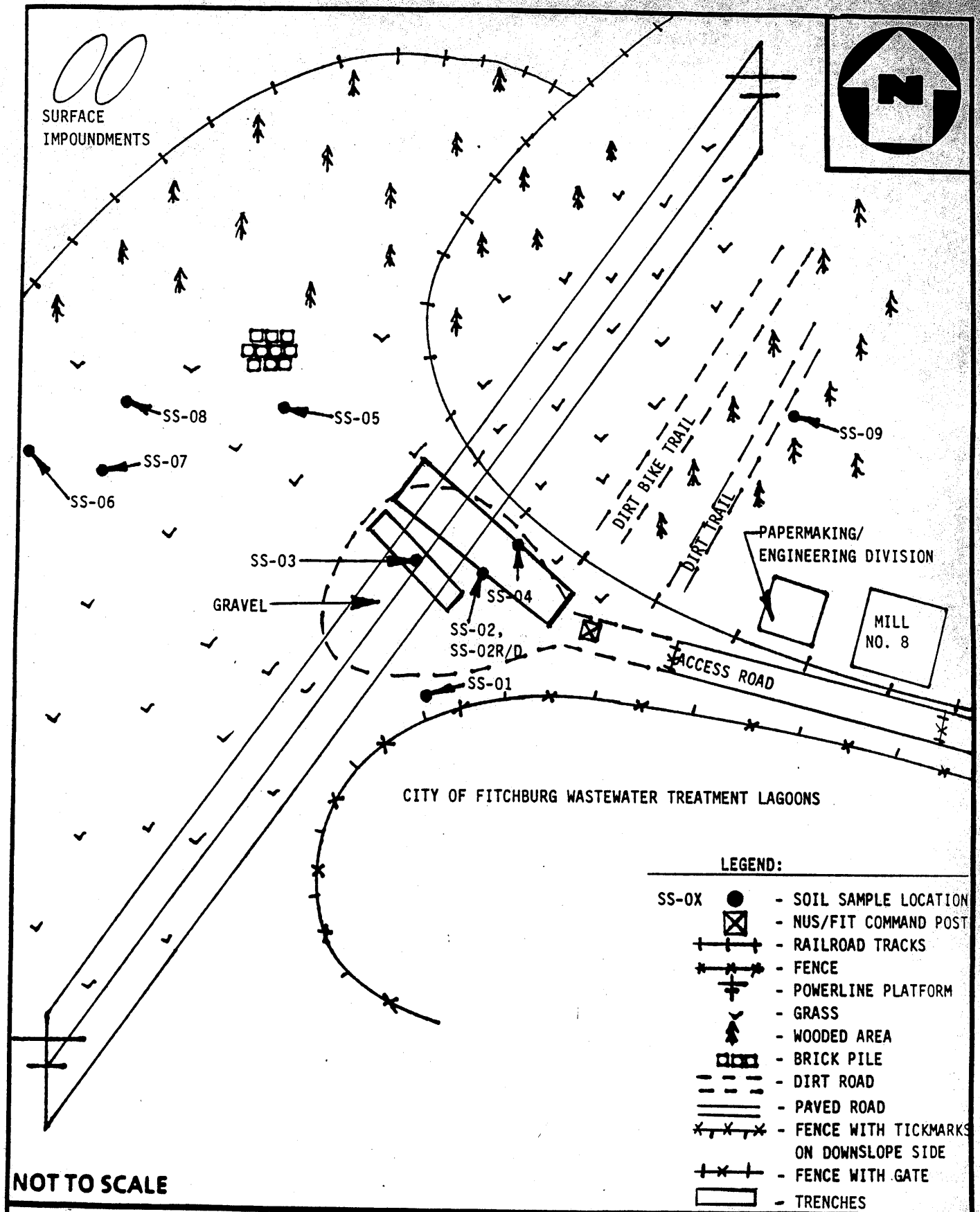
LOCATION MAP

JAMES RIVER INC. MILL NO. 8

FITCHBURG, MASSACHUSETTS

NUS CORPORATION

FIGURE 1



SITE SKETCH

JAMES RIVER INC. MILL NO. 8

FITCHBURG, MASSACHUSETTS

NUS CORPORATION

FIGURE 2

TABLE 1
SOURCE EVALUATION

Potential Source Area	Containment	Spatial Location
Contaminated soil	none	125 yards west of Papermaking/Engineering Division building
Contaminated soil in former buried drum area (trenches)	Drums in good condition. No evidence of liner	125-135 yards west of Papermaking/Engineering Division building
2 surface impoundments	unknown	Not viewed; however, these were reported to be located 0.75 miles northwest of the Papermaking/Engineering Division building
Brick pile	none	130 yards northwest of Papermaking/Engineering Division building

(NUS/FIT 1990).

During the NUS/FIT site reconnaissance, James River Mill representatives identified the City of Fitchburg's Wastewater Treatment Plant lagoon area located adjacent to the James River property, the property boundaries, the area where two trenches containing 1,327 drums were excavated, and the general direction of two surface impoundments where NUS/FIT did not sample. Access to the site was granted only for that area where drums had been excavated. A mill representative alluded to the fact that the analytical results of some samples collected from the mill property may indicate contaminants from the City of Fitchburg`s Wastewater Treatment Plant lagoons, as previous subsurface studies had indicated that leachate from the lagoons was traveling in a northwest direction, through the former buried drum area. It is not known when these previous samples were collected (NUS/FIT, 1990).

There are several other CERCLA sites in the area of James River Inc. Mill No. 8. They include: Fitchburg Gas and Electric (CERCLIS No. MAD980520431), Magnus Co., Inc. (CERCLIS No. MAD980520779), and Simonds Cutting Tools (CERCLIS No. MAD019367176), all in Fitchburg, and Decotone (also known as Cresticon, CERCLIS No. MAD046135224), located in Westminster. (U.S. EPA, 1990b).

SITE ACTIVITY/HISTORY

Ownership history and past uses of the James River Inc. Mill No. 8 property are as follows:

Owner	Type Of Business	Years Of Ownership
Crocker-Burbank Co.	paper manufacturing	1840-1962
Weyerhaeuser Co.	paper manufacturing	1962-1975
Weyerhaeuser Mass. Inc.	paper manufacturing	1975
James River, Inc.	paper manufacturing	1975-present

(Koszalka, 1990a; 1990d)

From 1969 to 1971, the Weyerhaeuser Co. reportedly disposed of non-chlorinated petroleum-based liquids and sludge contained in 1,327 55-gallon drums in two trenches on the property. Also disposed

of in those trenches were solid wastes, including paper rolls, pallets, roofing materials, furnace bricks, wire, and sheet metal. The sludge was a toluene-based sludge from the coating operation used by James River Inc.'s Mill No. 10, located on Oak Hill Road, Fitchburg, Massachusetts. It was transported to Mill No. 8, and buried there (Attachment C) (Koszalka, 1990e; MA DEQE, 1987).

In November 1980, an EPA Potential Hazardous Waste Site Identification and Preliminary Assessment listed three industrial impoundments used by the James River Inc. Mill No. 8 for the disposal of paper sludge. The surface impoundments were utilized from 1980 to 1984 (a period of approximately 4 years), and reportedly have not been used since 1984 (Koszalka, 1990b, 1990e; U.S. EPA, 1981). File information does not indicate if there was a hazardous component to the paper sludge. According to mill representatives, there are two impoundments, not three, as originally reported (Attachment A) (Koszalka, 1990b).

Prior to the closing of Mill No. 8 on June 1, 1990, the facility manufactured paper on the premises. All pulp was purchased, making James River a "non-integrated paper mill," as no pulp was manufactured at the facility. After 1984, paper sludge from the papermaking operation was sent to the City of Fitchburg's Wastewater Treatment Plant for processing (Koszalka, 1990e).

Table 2 lists all known waste types, quantities, volumes/areas, years of disposal, and source areas reportedly located at James River Inc. Mill No. 8:

TABLE 2
HAZARDOUS WASTE QUANTITY

Substance	Quantity	Volume/ Area	Years Of Disposal	Source Area
Non-chlorinated petroleum-based liquids; toluene-based sludge; paper rolls, pallets, roofing materials, wire, sheet metal	1,327 drums	Two trenches	1969-1971	former buried drum area
paper sludge	unknown	unknown	1980-1984	surface impoundments

Onsite work on James River Inc. Mill No. 8 property has included the removal of 1,327 drums, their contents, and contaminated soil, in August 1980. The drums were discovered buried in two trenches, at a minimum depth of 15 feet below the surface. Most were found intact, and in good condition. Non-chlorinated, non-water soluble hydrocarbons were pumped from the drums and shipped in bulk to Recycling Industries for incineration. Semi-solid, non-filterable polymers were shipped with the liquids, re-drummed at Recycling Industries, and disposed of at a secure chemical landfill operated by Chemical Waste Management, Emelle, Alabama. Secure drums containing solid paper mill residues were prepared for shipment in roll-off boxes, and shipped to a secure chemical landfill operated by Cecos International Inc., Niagara Falls, New York. Any damaged drums were crushed, and their contents were solidified with soil and clay. The empty crushed drums, solidified chemical residues, and excavated contaminated soil were shipped in dump trailers to the Cecos secure landfill (Recycling Industries, 1980).

No other remedial work, such as post-removal sampling, has taken place in the area of the former buried drums (MA DEQE, 1987).

The following table lists the RCRA status of James River Inc. Mill No. 8, as well as the National Pollutant Discharge Elimination System (NPDES) permit that has been granted:

RCRA Status/Permits	Status	Notification Date
RCRA	small quantity generator (100 to 1000 kilograms/month)	8/18/80
NPDES	General Permit	6/11/86

(U.S. EPA, 1989; 1990a)

ENVIRONMENTAL SETTING

James River Inc. Mill No. 8 is located in a mixed industrial and residential area of Fitchburg, Massachusetts (NUS/FIT, 1990). The nearest residence to Mill No. 8 is located on the access road, approximately 100 feet west of Route 31. From available information, the location of the nearest private well cannot be ascertained (NUS/FIT, 1990).

Overburden deposits reportedly consisted of fine-to medium-grained gravel in the excavation area, and soil types range from a light- colored, sandy soil to a dark, loamy soil (NUS/FIT, 1990).

The study area lies within the Merrimack Belt lithotectonic subdivision, which consists of Silurian and Lower Devonian sediments. The Merrimack Belt is composed of gray to white, medium-grained, weakly foliated muscovite-biotite granite. This bedrock complex commonly contains white pegmatite bearing muscovite and tourmaline, and may include some granite of late Paleozoic age. In addition, the metamorphic rocks in this complex consist of sillimanite, muscovite, and potassium feldspar. The typical assemblage is comprised of sillimanite, muscovite, garnet, biotite, potassium feldspar and plagioclase. The Wekepeke Fault, a normal fault that trends northeast-southwest, lies approximately 10 miles to the east of Mill No. 8. Depth to bedrock in the area could not be determined based upon available file information (USGS, 1978).

The direction of groundwater flow in overburden beneath the property is unknown based on available file information. Depth to groundwater in the area is not known (USGS, 1979). The total population served by drinking water from private wells is approximately 3,623 (NWWA, 1986).

The surrounding topography in the vicinity of Mill No. 8 consists of rolling hills, with the former buried drum area itself being located in a gulley. Based upon local topography, surface water runoff is most likely toward the north; the nearest downslope water body is Flag Brook, located approximately 0.25 miles to the southeast of the former buried drum area. Runoff appears to enter Snows Millpond, flow to the east via an unnamed brooklet, into Flag Brook (USGS, 1979).

There are several surface water bodies within 15 downstream miles of James River Inc. Mill No. 8. Snows Millpond, used by James River Inc. Mill No. 8 for "process water", flows into Flag Brook, located approximately 0.25 miles southeast of Mill No. 8. Flag Brook then flows south, and empties into Sawmill Pond, approximately 1 mile south of the Mill, then into Crocker Pond, located approximately 2 miles south of the Mill. Both Sawmill Pond and Crocker Pond are also used by the paper industry. Flag Brook continues its southerly flow, and empties into Crow Hills Pond located approximately 3.5 miles south of the Mill, then Paradise Pond, located approximately 4.5 miles south of the Mill. Crow Hills Pond and Paradise Pond are both used for recreational purposes, such as swimming, boating, fishing and skating. South of Paradise Pond, Flag Brook becomes Keyes Brook, and flows southeast until its confluence with Justice Brook, which is located approximately 7 miles

southeast of the Mill. Flag Brook and Justice Brook converge to form the Stillwater River, which flows to the southeast. The Stillwater River flows into the Stillwater Basin, located approximately 14 miles southeast of the Mill, and is also used recreationally, for canoeing and fishing. The 15-mile downstream has been approximated to the town of West Boylston, Massachusetts (Koszalka, 1990c; USGS, 1979).

None of these surface water bodies serves as a municipal drinking water supply, but the Stillwater River and the Stillwater Basin are watershed areas for the Wachusett Reservoir, which serves as a water supply for the cities of Fitchburg and Boston. The Wachusett Reservoir is located approximately 16.5 miles to the south of James River Inc. Mill No. 8. According to available information, the Mill is within the 100-year flood frequency area of the Stillwater River (Koszalka, 1990d; FEMA, 1981).

Most residents of the City of Fitchburg and the Town of Westminster are supplied with drinking water from surface water sources that are not located along a surface water pathway from the Mill. There are no municipal drinking water supplies drawing water from within 4 miles of the Mill (Koszalka, 1990c).

Table 3 lists those towns which have residents relying on private wells for drinking water within 4 miles of James River Inc. Mill No. 8. The City of Fitchburg and the Town of Westminster are both within the 4-mile radius. Please note that the populations indicated are based upon 1980 U.S. Census Bureau information. The population figures correspond to ZIP Code boundaries, which do not necessarily coincide with town boundaries. For this report, the distinction between people residing inside the 4-mile radius versus those residing outside the radius--but within the ZIP Code area-- has not been made.

TABLE 3
PRIVATE WELL USERS

Town	ZIP Code	1980 ZIP Code Population	Approximate Population Served By Private Wells
Fitchburg	01420	42,145	941
Westminster	01473	5,109	2,682
		Total number of private well users:	3,623

(NWWA, 1986)

The following flora and fauna are listed in the Massachusetts Natural Heritage and Endangered Species database, and known to occur within 4 miles of James River Inc. Mill No. 8:

Common Name	Scientific Name	State Rank
Arethusa Orchid	Arethusa bulbosa	Threatened
Spotted Turtle	Clemmys guttata	Special Concern

There are no other species listed in the database known to exist within 15 downstream miles of the James River Mill No. 8 property (Harshman, 1990).

Several wetlands are located within a 1-mile radius of the Mill No. 8 property, with the total area of wetlands comprising approximately 205 acres (USGS, 1979).

As the area in and near James River Inc. Mill No. 8 is primarily used for industrial purposes, there are no adjacent recreational use areas (USGS, 1979).

RESULTS

On July 11, 1990, NUS/FIT conducted a soil sampling round at the James River Inc. Mill No. 8 property. A total of 11 soil samples were collected, including a background, a trip blank, and a duplicate/replicate sample (Table 4, Figure 2).

All samples were analyzed through the U.S. EPA Contract Laboratory Program (CLP) for volatile and extractable organic compounds, and inorganic elements. Complete analytical results for these tables are presented in Attachment D, Tables 1 through 3. Sample quantitation and detection limits for these analyses are presented in Attachment E, Tables 1 through 3. Note that sample results qualified by a "J" on the tables are considered approximate due to limitations identified during the quality control review.

In addition to the complete analytical tables, a sample results summary table has also been included (Table 5). Presented in this summary table are the compounds or elements which were identified in samples and whose concentrations exceed three times the background (BKG) sample concentration for that compound or element. Where the compound or element of interest was not identified in the background sample, it is listed on the table as either having a concentration exceeding three times the background sample quantitation limit (BKQL) or detection limit (BKDL), or as being "detected". If the compound or element was "detected" in the sample but not in the background sample, the concentration does not exceed three times the background sample quantitation/detection limit.

Analysis of the soil samples indicated the presence of 6 volatile organic compounds, 16 inorganic elements, and 19 extractable organic compounds. No volatile organic compounds were detected with concentrations greater than 3 times the background quantitation limit (BKQL). The volatile organic compounds, including tetrachloroethene, carbon disulfide, 1,1-dichloroethane, chloroform, trichloroethene, and 1,2-dichloroethene. These compounds were detected in soil collected from sample locations SS-02, SS-05, SS-06, and SS-07.

Inorganic elements were detected in soil samples collected sample locations SS-01 through SS-09. The concentrations of elements ranged from 3 to 261 times the background sample concentrations. The highest concentrations of inorganic elements in the samples collected were detected in soil from sample locations SS-05 and SS- 06, located downslope of the former buried drum area. Lead was found in soil from all sample locations, and concentrations ranged from 23 to 119 parts per million (ppm), which represents 5 to 25 times the background concentration (BKG). Copper was also found in soil from all sample locations, with concentrations ranging from 14 to 42 ppm (9 to 26 times the BKG concentration). Beryllium was found in soil from 8 sample locations, with concentrations ranging from 0.68 to 2.30 ppm (3 to 11 times the BKG concentration). Mercury, typically used in the manufacture of paper, was found in soil from 7 sample locations including the background location, but only one soil sample contained concentrations greater than 3 times the BKG concentration. Nickel was found in soil from 9 sample locations including the background location, at concentrations ranging from 8 to 49 ppm (10 to 26 times the BKG concentration). Calcium was found in soil from 9 sample locations including the background, at concentrations ranging from 1,590 ppm to 41,600 ppm (10 to 261 times the BKG concentration). The discovery of elevated concentrations is consistent with the location of the excavated drums of non-chlorinated, petroleum-based liquids, wire, and sheet metal, which were buried during the period 1969-1971.

Extractable organic compounds were detected in soil samples collected from all sample locations, with the exception of soil collected from sample location SS-06, the sample location farthest from the drum excavation area. The concentrations of extractable organic compounds detected ranged from 3 to 100 times the BKQL (phenanthrene), with the highest concentrations found in soil from sample

TABLE 4
SAMPLE SUMMARY
JAMES RIVER INC. MILL NO. 8
FITCHBURG, MASSACHUSETTS
SOIL SAMPLES COLLECTED BY NUS/FIT ON JULY 11, 1990
FIGURE 2 SHOWS SAMPLE LOCATIONS

Sample Location	NUS Sample Card #'s	Remarks	Sample Source
SS-01	23966	Grab sample depth 14 inches	39 feet, 6 inches N50E of sample location SS-02. Drum removal area.
SS-02	23967	Grab sample depth 2 feet	174 feet, 8 inches S40E of southeast corner of powerline platform. Drum removal area.
SS-02R/D	23968	Grab sample depth 2 feet	Duplicate/Replicate of SS-02 for quality control purposes.
SS-03	23969	Grab sample depth 2.5 feet	29 feet, 9 inches S20W of sample location SS-02. Drum removal area.
SS-04	23970	Composite sample depth 8 inches	26 feet, 3 inches W65S of sample location SS-02. Drum removal area.
SS-05	23971	Grab sample depth 3 feet	67 feet S20W of sample location SS-02. Downslope of drum removal area.
SS-06	23972	Grab sample depth 3 feet	77 feet S25E of sample location SS-02. Downslope of drum removal area
SS-07	23973	Grab sample depth 3 feet	71 feet, 5 inches S30E of sample location SS-02. Downslope of drum removal area.

TABLE 4 (CONTINUED)
SAMPLE SUMMARY
JAMES RIVER INC. MILL NO. 8
FITCHBURG, MASSACHUSETTS
SOIL SAMPLES COLLECTED BY NUS/FIT ON JULY 11, 1990
FIGURE 2 SHOWS SAMPLE LOCATIONS

Sample Location	NUS Sample Card #'S	Remarks	Sample Source
SS-08	23974	Grab sample depth 20 inches	108 feet due south of sample location SS-02. Downslope of drum removal area.
SS-09	23975	Composite sample depth 3 feet	274 feet due north of sample location SS-02. In woods, up-slope of drum removal area.
SS-10	23976	N/A	Trip blank for quality control.

All VOA portions were collected as grab samples.

TABLE 5
SAMPLE RESULTS SUMMARY TABLE
JAMES RIVER INC. MILL NO. 8
FITCHBURG, MASSACHUSETTS
SOIL SAMPLES COLLECTED BY NUS/FIT ON JULY 11, 1990

Location	Compound/ Element	Concentration		Attachment/ Table #	Comments
SS-01	Barium	73.70	ppm	D3	5 times BKG
	Calcium	1590	ppm	D3	10 times BKG
	Copper	42.50	ppm	D3	26 times BKG
	Lead	119 J	ppm	D3	25 times BKG
	Mercury	0.91 J	ppm	D3	5 times BKG
	Nickel	8.40	ppm	D3	4 times BKG
	Vanadium	37.70	ppm	D3	7 times BKG
	Zinc	275 J	ppm	D3	25 times BKG
	acenaphthene	770 J	ppb	D2	Detected
	dibenzofuran	480 J	ppb	D2	Detected
	fluorene	730 J	ppb	D2	Detected
	phenanthrene	7100 J	ppb	D2	20 times BKQL
	anthracene	1700 J	ppb	D2	5 times BKQL
	fluoranthene	9000 J	ppb	D2	26 times BKQL
	pyrene	7900 J	ppb	D2	23 times BKQL
	benzo(a) anthracene	4100 J	ppb	D2	12 times BKQL
	chrysene	4400 J	ppb	D2	12 times BKQL
	benzo(b) fluoranthene	4000 J	ppb	D2	11 times BKQL
	benzo(k) fluoranthene	2900 J	ppb	D2	8 times BKQL
	benzo(a)pyrene	3700 J	ppb	D2	10 times BKQL
	indeno(1,2,3-cd) pyrene	2500 J	ppb	D2	7 times BKQL
	benzo(g,h,i) perylene	2100 J	ppb	D2	6 times BKQL
	naphthalene	260 J	ppb	D2	Detected
	2-methylnaphthalene	180 J	ppb	D2	Detected
SS-02	Barium	317.00	ppm	D3	24 times BKG
	Beryllium	0.81	ppm	D3	4 times BKDL
	Calcium	6820.00	ppm	D3	42 times BKG
	Cobalt	4.20	ppm	D3	4 times BKG
	Copper	21.50	ppm	D3	13 times BKG
	Nickel	9.00	ppm	D3	4 times BKG
	Potassium	1270	ppm	D3	3 times BKG
	Selenium	2.60 J	ppm	D3	4 times BKDL
	Sodium	271.00	ppm	D3	5 times BKDL
	Vanadium	45.20	ppm	D3	9 times BKG
	Zinc	88.70 J	ppm	D3	8 times BKG
	tetrachloroethene	13 J	ppb	D1	Detected
	acenaphthene	840 J	ppb	D2	Detected
	dibenzofuran	1100 J	ppb	D2	3 times BKQL

TABLE 5 (Continued)
SAMPLE RESULTS SUMMARY TABLE
JAMES RIVER INC. MILL NO. 8
FITCHBURG, MASSACHUSETTS
SOIL SAMPLES COLLECTED BY NUS/FIT ON JULY 11, 1990

Location	Compound/ Element	Concentration		Attachment/ Table #	Comments
	fluorene	1600 J	ppb	D2	4 times BKQL
	phenan-threne	11,000 J	ppb	D2	32 times BKQL
	anthracene	3100 J	ppb	D2	9 times BKQL
	fluoranthene	12,000 J	ppb	D2	35 times BKQL
	pyrene	9000 J	ppb	D2	26 times BKQL
	benzo(a)anthracene	5200 J	ppb	D2	15 times BKQL
	chrysene	4700 J	ppb	D2	13 times BKQL
	benzo(b)fluoranthene	3700 J	ppb	D2	10 times BKQL
	benzo(k)fluoranthene	3300 J	ppb	D2	9 times BKQL
	benzo(a)pyrene	3900 J	ppb	D2	11 times BKQL
	indeno(1,2,3-cd) pyrene	2700 J	ppb	D2	7 times BKQL
	benzo(g,h,i)perylene	2100 J	ppb	D2	6 times BKQL
	naphthalene	820 J	ppb	D2	Detected
	2-methylnaphthalene	410 J	ppb	D2	Detected
	acenaphthylene	300 J	ppb	D2	Detected
SS-02R/D	Barium	287.00	ppm	D3	22 times BKG
	Beryllium	0.68	ppm	D3	3 times BKDL
	Calcium	6670.00	ppm	D3	41 times BKG
	Cobalt	4.50	ppm	D3	4 times BKG
	Copper	22.60	ppm	D3	14 times BKG
	Lead	23.10 J	ppm	D3	5 times BKG
	Nickel	9.10	ppm	D3	4 times BKG
	Potassium	1190.00	ppm	D3	3 times BKG
	Selenium	1.50 J	ppm	D3	Detected
	Sodium	262.00	ppm	D3	5 times BKDL
	Vanadium	45.30	ppm	D3	9 times BKG
	Zinc	120.00 J	ppm	D3	11 times BKG
	acenaphthene	2400 J	ppb	D2	7 times BKQL
	dibenzofuran	3200 J	ppb	D2	9 times BKQL
	fluorene	4500 J	ppb	D2	13 times BKQL
	phenanthrene	34,000 J	ppb	D2	100 times BKQL
	anthracene	9400 J	ppb	D2	27 times BKQL
	fluoranthene	29,000 J	ppb	D2	85 times BKQL
	pyrene	33,000 J	ppb	D2	97 times BKQL
	benzo(a)anthracene	16,000 J	ppb	D2	47 times BKQL
	chrysene	14,000 J	ppb	D2	41 times BKQL
	benzo(b)fluoranthene	10,000 J	ppb	D2	29 times BKQL
	benzo(k)fluoranthene	9600 J	ppb	D2	28 times BKQL
	benzo(a)pyrene	12,000 J	ppb	D2	35 times BKQL
	indeno(1,2,3-cd)pyrene	8100 J	ppb	D2	23 times BKQL
	dibenz(a,h)anthracene	1500 J	ppb	D2	4 times BKQL

TABLE 5 (Continued)
SAMPLE RESULTS SUMMARY TABLE
JAMES RIVER INC. MILL NO. 8
FITCHBURG, MASSACHUSETTS
SOIL SAMPLES COLLECTED BY NUS/FIT ON JULY 11, 1990

Location	Compound/ Element	Concentration		Attachment/ Table #	Comments
	naphthalene	2500 J	ppb	D2	7 times BKQL
	benzo(g,h,i)perylene	6900 J	ppb	D2	20 times BKQL
	2-methylnaphthalene	910 J	ppb	D2	Detected
	acenaphthylene	1200 J	ppb	D2	3 times BKQL
SS-03	Barium	197.00	ppm	D3	15 times BKG
	Beryllium	0.36 J	ppm	D3	Detected
	Calcium	14,500.00	ppm	D3	91 times BKG
	Cobalt	5.00	ppm	D3	5 times BKG
	Copper	21.00	ppm	D3	13 times BKG
	Lead	64.30 J	ppm	D3	13 times BKG
	Nickel	17.60	ppm	D3	9 times BKG
	Selenium	2.60 J	ppm	D3	4 times BKDL
	Vanadium	85.60	ppm	D3	17 times BKG
	Zinc	1240.00 J	ppm	D3	114 times BKG
	pentachlorophenol	1600 J	ppb	D2	Detected
	phenanthrene	890 J	ppb	D2	Detected
	fluoranthene	1000 J	ppb	D2	Detected
	pyrene	460 J	ppb	D2	Detected
	benzo(a)anthracene	460 J	ppb	D2	Detected
	chrysene	380 J	ppb	D2	Detected
	benzo(b) fluoranthene	370 J	ppb	D2	Detected
	Aroclor-1242	3100 J	ppb	D2	37 times BKQL
SS-04	Barium	123.00	ppm	D3	9 times BKG
	Beryllium	0.26 J	ppm	D3	Detected
	Calcium	2840.00	ppm	D3	17 times BKG
	Cobalt	4.10	ppm	D3	4 times BKG
	Copper	14.40	ppm	D3	9 times BKG
	Lead	44.20 J	ppm	D3	9 times BKG
	Nickel	12.50	ppm	D3	6 times BKG
	Selenium	1.20 J	ppm	D3	Detected
	Vanadium	66.80	ppm	D3	13 times BKG
	Zinc	200.00 J	ppm	D3	18 times BKG
	phenanthrene	1200 J	ppb	D2	3 times BKQL
	anthracene	250 J	ppb	D2	Detected
	fluoranthene	1500 J	ppb	D2	4 times BKQL
	pyrene	1500 J	ppb	D2	4 times BKQL
	benzo(a)anthracene	800 J	ppb	D2	Detected
	chrysene	870 J	ppb	D2	Detected

TABLE 5 (Continued)
SAMPLE RESULTS SUMMARY TABLE
JAMES RIVER INC. MILL NO. 8
FITCHBURG, MASSACHUSETTS
SOIL SAMPLES COLLECTED BY NUS/FIT ON JULY 11, 1990

Location	Compound/ Element	Concentration		Attachment/ Table #	Comments
	benzo(b)fluoranthene	780 J	ppb	D2	Detected
	benzo(k) fluoranthene	440 J	ppb	D2	Detected
	benzo(a)pyrene	760 J	ppb	D2	Detected
	indeno(1,2,3-cd)pyrene	540 J	ppb	D2	Detected
	benzo(g,h,i)perylene	700 J	ppb	D2	Detected
SS-05	Barium	246.00	ppm	D3	18 times BKG
	Beryllium	1.10	ppm	D3	5 times BKDL
	Calcium	19,300.00	ppm	D3	121 times BKG
	Cobalt	9.00	ppm	D3	9 times BKG
	Copper	28.00	ppm	D3	17 times BKG
	Lead	33.80 J	ppm	D3	7 times BKG
	Magnesium	2100.00	ppm	D3	3 times BKG
	Manganese	188.00	ppm	D3	3 times BKG
	Nickel	49.80	ppm	D3	26 times BKG
	Potassium	1460.00	ppm	D3	3 times BKG
	Selenium	2.40 J	ppm	D3	4 times BKDL
	Sodium	220.00	ppm	D3	4 times BKDL
	Vanadium	92.50	ppm	D3	19 times BKG
	Zinc	2000.00 J	ppm	D3	185 times BKG
	carbon disulfide	7 J	ppb	D1	Detected
	tetrachloroethene	8 J	ppb	D1	Detected
	acenaphthene	940 J	ppb	D2	Detected
	dibenzofuran	810 J	ppb	D2	Detected
	fluorene	1500 J	ppb	D2	4 times BKQL
	pentachlorophenol	9000 J	ppb	D2	5 times BKQL
	phenanthrene	9600 J	ppb	D2	28 times BKQL
	anthracene	1900 J	ppb	D2	5 times BKQL
	fluoranthene	7000 J	ppb	D2	20 times BKQL
	pyrene	7800 J	ppb	D2	22 times BKQL
	benzo(a)anthracene	3700 J	ppb	D2	10 times BKQL
	chrysene	3900 J	ppb	D2	11 times BKQL
	benzo(b)fluoranthene	2600 J	ppb	D2	7 times BKQL
	benzo(k)fluoranthene	1600 J	ppb	D2	4 times BKQL
	benzo(a)pyrene	2500 J	ppb	D2	7 times BKQL
	indeno(1,2,3-cd)pyrene	1900 J	ppb	D2	5 times BKQL
	dibenz(a,h)anthracene	420 J	ppb	D2	Detected
	benzo(g,h,i)perylene	1400 J	ppb	D2	4 times BKQL
	naphthalene	720 J	ppb	D2	Detected
	2-methylnaphthalene	290 J	ppb	D2	Detected

TABLE 5 (Continued)
SAMPLE RESULTS SUMMARY TABLE
JAMES RIVER INC. MILL NO. 8
FITCHBURG, MASSACHUSETTS
SOIL SAMPLES COLLECTED BY NUS/FIT ON JULY 11, 1990

Location	Compound/ Element	Concentration		Attachment/ Table #	Comments
SS-06	Barium	390.00 J	ppm	D3	30 times BKG
	Beryllium	2.30	ppm	D3	11 times BKDL
	Calcium	41,600.00	ppm	D3	261 times BKG
	Cobalt	11.50	ppm	D3	12 times BKG
	Copper	34.60	ppm	D3	21 times BKG
	Iron	22,700.00 J	ppm	D3	4 times BKG
	Magnesium	3780.00	ppm	D3	6 times BKG
	Manganese	233.00	ppm	D3	4 times BKG
	Nickel	22.80	ppm	D3	12 times BKG
	Potassium	1580.00	ppm	D3	4 times BKG
	Selenium	1.80 J	ppm	D3	3 times BKDL
	Sodium	295.00 J	ppm	D3	6 times BKDL
	Vanadium	102.00	ppm	D3	21 times BKG
	1,1 di-chloroethane	7 J	ppb	D1	Detected
	chloroform	2 J	ppb	D1	Detected
SS-07	Barium	156.00	ppm	D3	12 times BKG
	Beryllium	0.73	ppm	D3	3 times BKDL
	Calcium	9490.00	ppm	D3	59 times BKG
	Cobalt	4.70	ppm	D3	5 times BKG
	Copper	24.20	ppm	D3	15 times BKG
	Lead	39.10 J	ppm	D3	8 times BKG
	Magnesium	1730.00	ppm	D3	3 times BKG
	Nickel	13.30	ppm	D3	7 times BKG
	Selenium	1.60 J	ppm	D3	Detected
	Vanadium	46.40	ppm	D3	9 times BKG
	Zinc	380.00 J	ppm	D3	35 times BKG
	1,2 dichloroethene	6 J	ppb	D1	Detected
	trichloroethene	3 J	ppb	D1	Detected
	tetrachloroethene	6 J	ppb	D1	Detected
	acenaphthene	340 J	ppb	D2	Detected
	dibenzofuran	340 J	ppb	D2	Detected
	fluorene	460 J	ppb	D2	Detected
	pentachlorophenol	1000 J	ppb	D2	Detected
	phenanthrene	3700 J	ppb	D2	10 times BKQL
	anthracene	850 J	ppb	D2	Detected
	fluoranthene	2900 J	ppb	D2	8 times BKQL
	pyrene	3300 J	ppb	D2	9 times BKQL
	benzo(a)anthracene	1400 J	ppb	D2	4 times BKQL

TABLE 5 (Continued)
SAMPLE RESULTS SUMMARY TABLE
JAMES RIVER INC. MILL NO. 8
FITCHBURG, MASSACHUSETTS
SOIL SAMPLES COLLECTED BY NUS/FIT ON JULY 11, 1990

Location	Compound/ Element	Concentration		Attachment/ Table #	Comments
	chrysene	1400 J	ppb	D2	4 times BKQL
	benzo(b)fluoranthene	1100 J	ppb	D2	3 times BKQL
	benzo(k)fluoranthene	800 J	ppb	D2	Detected
	benzo(a)pyrene	1100 J	ppb	D2	3 times BKQL
	indeno(1,2,3-cd)pyrene	1100 J	ppb	D2	3 times BKQL
	dibenz(a,h)anthracene	150 J	ppb	D2	Detected
	benzo(g,h,i)perylene	750 J	ppb	D2	Detected
	phenol	56 J	ppb	D2	Detected
	benzoic acid	72 J	ppb	D2	Detected
	naphthalene	330 J	ppb	D2	Detected
	2-methylnaphthalene	120 J	ppb	D2	Detected
	acenaphthylene	80 J	ppb	D2	Detected
SS-08	Barium	224.00	ppm	D3	17 times BKG
	Beryllium	0.80	ppm	D3	4 times BKDL
	Calcium	16,400.00	ppm	D3	103 times BKG
	Cobalt	6.00	ppm	D3	6 times BKG
	Copper	22.30	ppm	D3	13 times BKG
	Lead	25.30 J	ppm	D3	5 times BKG
	Magnesium	1940.00	ppm	D3	3 times BKG
	Nickel	18.00	ppm	D3	9 times BKG
	Potassium	1230.00	ppm	D3	3 times BKG
	Selenium	1.60 J	ppm	D3	Detected
	Sodium	201.00	ppm	D3	4 times BKG
	Vanadium	86.30	ppm	D3	17 times BKG
	Zinc	519.00 J	ppm	D3	48 times BKG
	phenanthrene	320 J	ppb	D2	Detected
	anthracene	71 J	ppb	D2	Detected
	fluoranthene	380 J	ppb	D2	Detected
	pyrene	350 J	ppb	D2	Detected
	benzo(a)anthracene	200 J	ppb	D2	Detected
	chrysene	190 J	ppb	D2	Detected
	benzo(b)fluoranthene	140 J	ppb	D2	Detected
	benzo(k)fluoranthene	140 J	ppb	D2	Detected

TABLE 5 (Continued)
SAMPLE RESULTS SUMMARY TABLE
JAMES RIVER INC. MILL NO. 8
FITCHBURG, MASSACHUSETTS
SOIL SAMPLES COLLECTED BY NUS/FIT ON JULY 11, 1990

Location	Compound/ Element	Concentration		Attachment/ Table #	Comments
SS-08	benzo(a)pyrene	150 J	ppb	D2	Detected
	indeno(1,2,3-cd)pyrene	110 J	ppb	D2	Detected
	benzo(g,h,i) perylene	86 J	ppb	D2	Detected

Key:

BKG	=	Background sample concentration
BKQL	=	background sample quantitation limits
BKDL	=	background sample detection limits
detected	=	compound was detected in the sample but not in the background sample; concentration does not exceed three times the background quantitation limit.
J	=	Quantitation limit is approximate due to limitations identified during the quality control review.
ppm/ppb	=	parts per million/parts per billlion

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location SS-02R/D. This is the location of one of the trenches excavated to remove the buried drums. One polychlorinated biphenol (PCB), Aroclor 1242, was detected in soil from sample location SS-03, at a concentration 37 times the background quantitation limit (BKQL). According to available file information, PCB's are typically used in the de-inking process utilized in the papermaking industry.

All of the sample locations, with the exception of the background sample, were located either in the drum excavation area, or downslope of the City of Fitchburg's Wastewater Treatment lagoons.

SUMMARY

James River Inc. Mill No. 8, located in Fitchburg, Massachusetts, is a paper manufacturing facility, occupying 98.7 acres. Paper manufacturing has taken place on this property since 1840, but ceased on June 1, 1990, when James River, Inc. closed the mill.

From 1969 to 1971, the Weyerhaeuser Co., the owners of the property at the time, reportedly disposed of 1,327 55-gallon drums containing non-chlorinated, petroleum-based liquids and toluene-based sludge in two trenches on the property. Furnace bricks, wire, pallets, paper rolls, roofing materials, and sheet metal were also buried, along with the drums. Excavation of the drums and potentially contaminated soils was accomplished in 1980. File information did not document any post-remedial soil sampling.

Analytical results of soil samples collected during the NUS/FIT site reconnaissance and sampling round on July 11, 1990 detected elevated concentrations of inorganic elements, volatile organic compounds, and extractable organic compounds, ranging from 3 to 261 times the background sample concentration. One PCB, Aroclor 1242, was detected in soil from one sample location, at a concentration of 37 times the background quantitation limit. All sample locations were located in the drum excavation area, and also downslope of the City of Fitchburg's Wastewater Treatment Plant lagoons.

There are approximately 3,623 private well users in the City of Fitchburg, and the Town of Westminster. Due to the presence of volatile organic compounds, inorganic elements, and extractable organic compounds which were detected at many times the background concentrations, NUS/FIT recommends that a Listing Site Inspection be conducted at James River Inc. Mill No. 8.

Submitted by:

Susan M. Koszalka
Susan M. Koszalka
Project Manager

Approval:
Robert Jubach
FIT Office Manager

SMK:aa

LIST OF ATTACHMENTS

Attachment A	-	EPA Potential Hazardous Waste Site Identification and Preliminary Assessment, July 20, 1981; EPA Potential Hazardous Waste Site Identification, March 4, 1981.
Attachment B	-	Recycling Industries, Inc. Report on Fitchburg Hazardous Waste Removal and Project Summary. October, November, 1980.
Attachment C	-	Memorandum to D. Hannon from M. Gardner. Subject: MSCA, Preliminary Assessment Package for James River Massachusetts, Mill #8, Old Princeton Road, Fitchburg, Massachusetts, MAD # 065777344. June 1, 1987.
Attachment D	-	CLP Analytical Results for Soil Samples Collected by NUS/FIT from James River Inc. Mill No. 8 on June 11, 1990.
Attachment E	-	CLP Quantitation Limits and Detection Limits for Soil Samples collected by NUS/FIT from James River Inc. Mill No. 8 on July 11, 1990.

ATTACHMENT A

EPA Potential Hazardous Waste Site Identification and
Preliminary Assessment, July 20, 1981;
EPA Potential Hazardous Waste Site Identification,
March 4, 1981.

EPA

POTENTIAL HAZARDOUS WASTE SITE
IDENTIFICATION AND PRELIMINARY ASSESSMENT

REGION	SITE NUMBER (to be assigned by Hq)
01	MA0000010243

NOTE: This form is completed for each potential hazardous waste site to help set priorities for site inspection. The information submitted on this form is based on available records and may be updated on subsequent forms as a result of additional inquiries and on-site inspections.

GENERAL INSTRUCTIONS: Complete Sections I and III through X as completely as possible before Section II *(Preliminary Assessment)*. File this form in the Regional Hazardous Waste Log File and submit a copy to: U.S. Environmental Protection Agency; Site Tracking System; Hazardous Waste Enforcement Task Force *(EN-335)*; 401 M St., SW; Washington, DC 20460.

I. SITE IDENTIFICATION

A. SITE NAME: JAMES RIVER FITCHBURG, INC.

B. STREET *(or other identifier)*: Old PRINCETON RD

C. CITY: FITCHBURG

D. STATE: MA

E. ZIP CODE: 01420

F. COUNTY NAME: WORCESTER

G. OWNER/OPERATOR *(if known)*
1. NAME:
2. TELEPHONE NUMBER:

H. TYPE OF OWNERSHIP
☐ 1. FEDERAL ☐ 2. STATE ☐ 3. COUNTY ☐ 4. MUNICIPAL ☒ 5. PRIVATE ☐ 6. UNKNOWN

I. SITE DESCRIPTION: 3 impoundments

J. HOW IDENTIFIED *(i.e., citizen's complaints, OSHA citations, etc.)*: SIA. MA State Inventory

K. DATE IDENTIFIED *(mo., day, & yr.)*: 11/17/80

L. PRINCIPAL STATE CONTACT
1. NAME: R. Slein
2. TELEPHONE NUMBER: 791-3672

II. PRELIMINARY ASSESSMENT *(complete this section last)*

A. APPARENT SERIOUSNESS OF PROBLEM
☐ 1. HIGH ☒ 2. MEDIUM ☐ 3. LOW ☐ 4 NONE ☐ 5. UNKNOWN

B. RECOMMENDATION
☐ 1. NO ACTION NEEDED *(no hazard)*
☐ 2. IMMEDIATE SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR:
b. WILL BE PERFORMED BY:
☐ 3. SITE INSPECTION NEEDED
a. TENTATIVELY SCHEDULED FOR:
b. WILL BE PERFORMED BY:
☐ 4. SITE INSPECTION NEEDED *(low priority)*

C. PREPARER INFORMATION
1. NAME: Jean Mackey
2. TELEPHONE NUMBER: 223-0044
3. DATE *(mo., day, & yr.)*: 7/20/81

III. SITE INFORMATION

A. SITE STATUS
☐ 1. ACTIVE *(Those industrial or municipal sites which are being used for waste treatment, storage, or disposal on a continuing basis, even if intermittently.)*
☐ 2. INACTIVE *(Those sites which no longer receive wastes.)*
☐ 3. OTHER *(specify)*: *(Those sites that include such incidents like "midnight dumping" where no regular or continuing use of the site for waste disposal has occurred.)*

B. IS GENERATOR ON SITE?
☐ 1. NO ☐ 2. YES *(specify generator's four-digit SIC Code)*: 2671

C. AREA OF SITE *(in acres)*:

D. IF APPARENT SERIOUSNESS OF SITE IS HIGH, SPECIFY COORDINATES
1. LATITUDE *(deg.-min.-sec.)*: 42-33-38
2. LONGITUDE *(deg.-min.-sec.)*: 071-50-53

E. ARE THERE BUILDINGS ON THE SITE?
☐ 1. NO ☐ 2. YES *(specify)*:

Continued From Page 2

V. WASTE RELATED INFORMATION (continued)

3. LIST SUBSTANCES OF GREATEST CONCERN WHICH MAY BE ON THE SITE (place in descending order of hazard).

4. ADDITIONAL COMMENTS OR NARRATIVE DESCRIPTION OF SITUATION KNOWN OR REPORTED TO EXIST AT THE SITE.

2 pits contain undrained rainwater + sludge; additional investigation ~~are~~ of 4 large lagoons which are used for disposal of pulp + paper sludge

VI. HAZARD DESCRIPTION

A. TYPE OF HAZARD	B. POTENTIAL HAZARD (mark 'X')	C. ALLEGED INCIDENT (mark 'X')	D. DATE OF INCIDENT (mo., day, yr.)	E. REMARKS
1. NO HAZARD				
2. HUMAN HEALTH				
3. NON-WORKER INJURY/EXPOSURE				
4. WORKER INJURY				
5. CONTAMINATION OF WATER SUPPLY				
6. CONTAMINATION OF FOOD CHAIN				
7. CONTAMINATION OF GROUND WATER				
8. CONTAMINATION OF SURFACE WATER				
9. DAMAGE TO FLORA/FAUNA				
10. FISH KILL				
11. CONTAMINATION OF AIR				
12. NOTICEABLE ODORS				
13. CONTAMINATION OF SOIL				
14. PROPERTY DAMAGE				
15. FIRE OR EXPLOSION				
16. SPILLS/LEAKING CONTAINERS/ RUNOFF/STANDING LIQUIDS				
17. SEWER, STORM DRAIN PROBLEMS				
18. EROSION PROBLEMS				
19. INADEQUATE SECURITY				
20. INCOMPATIBLE WASTES				
21. MIDNIGHT DUMPING				
22. OTHER (specify):				

EPA POTENTIAL HAZARDOUS WASTE SITE IDENTIFICATION

REGION: I | SITE NUMBER: 10243

NOTE: The initial identification of a potential site or incident should not be interpreted as a finding of illegal activity or confirmation that an actual health or environmental threat exists. All identified sites will be assessed under the EPA's Hazardous Waste Site Enforcement and Response System to determine if a hazardous waste problem actually exists.

A. SITE NAME	B. STREET (or other identifier)		
James River Paper	Old Princeton Rd.		
C. CITY	**D. STATE**	**E. ZIP CODE**	**F. COUNTY NAME**
Fitchburg	Mass	01420	Worcester

G. OWNER/OPERATOR (if known)

1. NAME

2. TELEPHONE NUMBER

H. TYPE OF OWNERSHIP (if known)

☐ 1. FEDERAL ☐ 2. STATE ☐ 3. COUNTY ☐ 4. MUNICIPAL ☒ 5. PRIVATE ☐ 6. UNKNOWN

I. SITE DESCRIPTION

3 industrial impoundments

J. HOW IDENTIFIED (i.e., citizen's complaints, OSHA citations, etc.)

SIA Report - Mass. Site Inventory

K. DATE IDENTIFIED (mo., day, & yr.)

11/17/80

L. SUMMARY OF POTENTIAL OR KNOWN PROBLEM

Contamination potential of impoundment

M. PREPARER INFORMATION

1. NAME	2. TELEPHONE NUMBER	3. DATE (mo., day, & yr.)
Ruth Leabman - EPA	223-0044	3/4/81

EPA Form 2070-8 (5-80)

ATTACHMENT B

Recycling Industries, Inc. Report on Fitchburg
Hazardous Waste Removal and Project Summary
October, November, 1980.

RECYCLING INDUSTRIES, INC.
AN SCA SERVICES CO.

385 Quincy Avenue
Braintree, Massachusetts 02184
(617) 848-0612

SCA
CHEMICAL
SERVICES

October 23, 1980

Mr. David C. Morris
Weyerhaeuser Company
WTC 1F19
Tacoma, Washington 98477

Dear Mr. Morris:

Attached is the written summary for the cleanup and disposal project in Fitchburg.

Recycling Industries certifies that, to the best of our knowledge and professional judgment, all drums and contaminated residues were removed from the areas that we investigated (referenced in the summary).

We appreciate being of service to you and your company. Please call me if you need further information.

Very truly yours,

RECYCLING INDUSTRIES INC.

James H Purington

James H. Purington

JHP:jy

Enc.

Interoffice Communication

Weyerhaeuser

Date October 27, 1980

From D. C. Morris

Location WTC 1F19

Subject REPORT ON FITCHBURG HAZARDOUS WASTE REMOVAL

To S. A. Heller - CH 3-25

During our August 27 meeting with the Massachusetts DEQE, City of Fitchburg, and James River, we agreed that Weyerhaeuser would furnish a report to the DEQE following completion of the drum removal project at James River mill No. 8. This memorandum and the enclosed information is provided for that purpose, and includes what was orally presented at the August meeting, plus some supplementary information.

In the planning of the drum removal project, one of our initial tasks was to learn as much as possible about the site and the buried material. Various interviews were held and records were searched concerning the placement of the drums approximately ten years ago.

The second preliminary task was to engage a competent contractor. Discussions were held with three firms, and Recycling Industries was selected. Their proposal for performing the removal was submitted for pre-approval to the DEQE. The cleanup work commenced in early August, and is described in the attached report from Recycling Industries dated October 23, 1980. I have reviewed that report and find it substantially accurate and complete.

As the Recycling Industries report indicates, the drums excavated from trenches No. 1 and No. 2 (the only sources of such buried drums) were in remarkably good condition. Leakage was negligible. It appeared that little if any of the contents of the drums were lost to the soil prior to the excavation. Some soil was contaminated during the cleanup; that soil was either aerated to permit solvent evaporation or sent to a secure land fill.

To ensure that the work was completed to the satisfaction of all parties concerned, an experienced Weyerhaeuser environmental engineer (myself and/or G. V. Moellendorf) was present throughout the entire project with the exception of the last three working days of the completion phase; during the latter period, a James River environmental supervisor monitored shipment of wastes and rough restoration of the site.

Security personnel were on the site throughout the project, primarily to ensure that no public contact would be made with hazardous materials or conditions.

Also, attached are a series of photographs that will supplement the information in the report.

The site has been graded and seeded, and should be even more aesthetically acceptable than now in the very near future.

D. C. Morris
Environmental Engineer
jc IC/C8

Attachment

[illegible] INDUSTRIES, INC.

SCA
CHEMICAL
SERVICES

PROJECT SUMMARY

Weyerhaeuser Company
Site Cleanup & Disposal
Fitchburg, Massachusetts

Project 0295-0001

August - September 1080

INTRODUCTION

This report is an accounting of the methodology followed and the chronological sequence of events undertaken by Recycling Industries of Braintree, MA. for Weyerhaeuser Corporation as outlined in Agreement #0295-0001.

PROPOSAL & AGREEMENT

On March 25, 1980, representatives of Recycling Industries met with a representative of James River - Massachusetts Inc. at their Mill 8 in Fitchburg to view and discuss a site adjacent to the municipal sludge lagoon and railroad tracks. Drums of waste residue were on the surface of the site, and it was indicated that additional drums remained below ground. Discussions and our preliminary proposal were summarized in our letter of April 15 to James River.

On June 4 Recycling Industries' proposal was discussed in more detail with representatives of James River and Weyerhaeuser Company. A more detailed proposal was submitted to James River on June 13.

On July 3 Recycling Industries responded to questions from Weyerhaeuser Company, and submitted a revised proposal to Weyerhaeuser to abate the site previously seen and described. A copy of that proposal is attached.

A contract was entered into between Recycling Industries and Weyerhaeuser on July 25th. A preliminary field survey was done on July 30th when the area was scanned with a ferro-magnetic detector. The sensitive areas were outlined with a series of stakes. Site work was scheduled to begin on August 4.

COMMENCEMENT & EXCAVATION

The project commenced on August 4th with the establishment of a secure staging area for the anticipated drummed waste. This area was constructed by leveling the area marked "wet storage" on the attached site map, covering the area with polyethylene sheeting and finishing with clay compacted on top of the poly sheeting. Clay berms were also constructed. Four test holes were dug by hand, at random, to get an approximation of the depth of overburden.

Due to the limited space available for overburden stockpiling, the alternative selected was to divide the area into quadrants and work one at a time, moving the overburden accordingly. Initially, overburden from area 2 was removed and stockpiled in area 3 (see attached

site map). Trench #1 (area 1) was dug and containers were removed to the storage area as they were uncovered. Quantities of mill trash, i.e. paper rolls, pallets, calendar rolls and the like, were also encountered, which substantiated the original premise that the area had been utilized for other than disposal of chemical waste. The trench was dug to a depth of 15 feet, which was well below the grade at which the last containers and contaminated soil were removed. Verification that all containers had been removed was also achieved through metal detection.

Overburden from area 3 was then removed back into area 2, and trench #2 (area 4 on the site map) was uncovered. Excavation and contaminant removal in this trench was accomplished in the same fashion as in the previous trench. The east end of the trench was excavated to the edge of the recently completed municipal lagoon dike until the contractor's fill was found. Trench #2 was dug to a minimum depth of 15 feet, and completion was again verified by the ferro-magnetic detector.

Exploration dig #3 was done in the area listed as 5 on the map as readings had indicated a metallic presence. Material found was mill trash, i.e. roofing members, wire and sheet metal. No chemical containers or contamination was discovered.

Exploration digs #3 and #4 (areas 6,7 and 8) were excavated on the basis of recollections of the parties involved that more waste may have been deposited in this area. The exploratory digging did not indicate the presence of any material.

The drums excavated from trenches #1 and #2 (areas 1 & 4) were in remarkably good condition. This was attributed to their position in the ground, drainage qualities of the fly ash, and the trash on top of the containers which acted as a shield. No wet areas or standing groundwater were observed during the excavations.

DISPOSAL & PROJECT COMPLETION

Removed containers were opened and their contents checked. Free liquids were confirmed to be non-chlorinated, non-water soluble hydrocarbons. These were pumped from the drums and shipped in bulk to Recycling Industries for incineration. Semi-solid, non-filterable polymers shipped with the liquids were redrummed at Recycling Industries for disposal at the secure chemical land-

fill operated by Chemical Waste Management, Emelle, Alabama.

Secure drums containing solid paper mill residues were prepared for shipment in roll-off boxes to the secure chemical landfill operated by Cecos International Inc., Niagara Falls, New York.

Damaged drums were crushed. Their contents were solidified with soil and clay. The empty crushed drums, solidified chemical residues, and other excavated contaminated soil were shipped in dump trailers to the Cecos secure landfill.

On September 8 the staging areas were cleaned and the last of the chemical contaminants were moved from the site. The site was roughly graded, and the project was considered abated. Equipment was removed from the site.

On September 11 representatives of Weyerhaeuser Company and Recycling Industries again viewed the site to confirm that the work had been completed.

CERTIFICATION

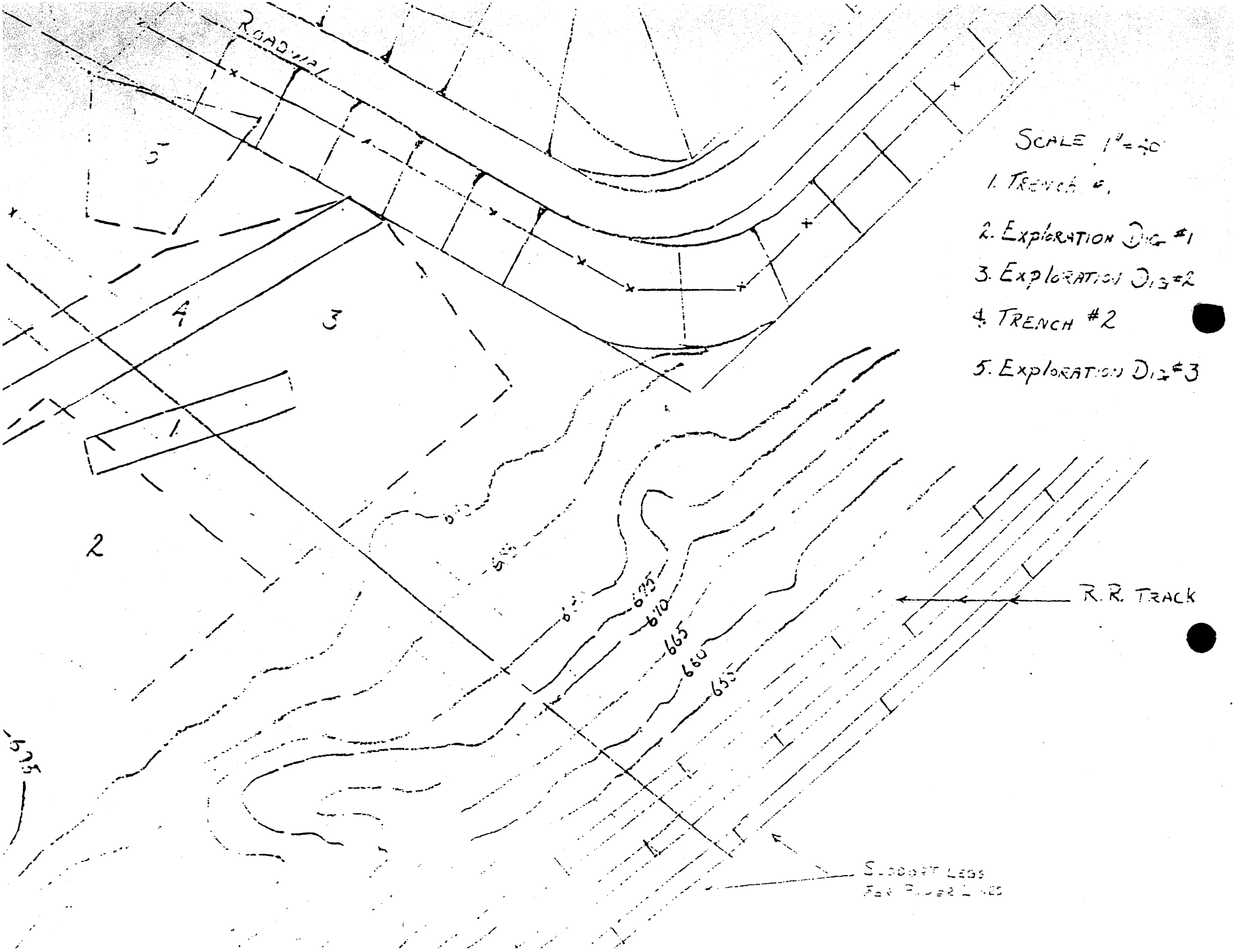
Recycling Industries certifies that all material removed from the site has been completely disposed of at Recycling Industries or in other licensed disposal facilities, in full compliance with all provisions of Mass. Hazardous Waste Regulations filed with the Secretary of State on January 11, 1973, including amendments thereto, and in accordance with all applicable Federal, State and local pollution control laws, regulations and ordinances.

CERTIFICATION (continued)

Drummed Waste Excavated: 1327 Drums

Contaminants Disposed:

Type	Method & Location	Quantity
Flammable Liquid & Polymerized Semi-Solids	Incineration-Recycling Industries	3900 gallons
	Secure Landfill-Chemical Waste Management, Emelle, Alabama	700 gallons (4 loads)
Solid Residues	Secure Landfill-Cecos International Inc., Niagara Falls, New York	74 Drums (2 loads)
Contaminated Soil & Solidified Residues	Same	238 tons (15 loads)
Empty Crushed Drums	Same	100 tons (8 loads)
TOTALS:	29 loads containing	4600 gallons 74 drums 338 tons


ROADWAY
SCALE 1"=20'
1. TRENCH #1
2. EXPLORATION DIG #1
3. EXPLORATION DIG #2
4. TRENCH #2
5. EXPLORATION DIG #3
R.R. TRACK
SUPPORT LEGS FOR POWER LINES
675
670
665
660
655

The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Department of Environmental Quality Engineering
Central Region
75 Grove Street, Worcester, Massachusetts 01605

November 20, 1980

Weyerhaueser Company
Tacoma, Washington 98477

Re: Fitchburg - Removal of Hazardous Waste

Attn: Stuart A. Heller, Manager
Environmental Affairs
Occupational Health & Safety

Gentlemen:

The Department of Environmental Quality Engineering is in receipt of your letter dated November 7, 1980, and the accompanying report regarding the removal of hazardous waste from a site proximate to James River Company, Mill #8, Fitchburg, Mass.

A review of the report reveals that the following material was removed from the above-mentioned site.

	Amount of Material Removed		
	Drums	Gallons	Tons
Drummed Waste Excavated	1327		
Flameable Liquid & Polymerized semi solids recovered		4600	
Solid Residue	74		
Contaminated Soil & Solidified Residue			238
Empty Crushed Drums			100

The following methods and procedures were utilized in the drum removal project.

- Conducted interviews and searched records concerning the placement of drums and materials stored in the drums.

- Established a secure staging area for the drummed waste. This was done by leveling an area in a general area where the drums had been buried, covering the area with a polyethylene sheet, and compacting clay on the sheet. In addition, clay berms were also constructed.

- Overburden was removed and drums were placed in the storage area as they were uncovered. The trenches were dug to a grade below where any barrels were recovered. In addition, any contaminated soil was removed. Verification that all drums had been removed was done through inspection of personnel at the site and the utilization of metal detectors.

- Additional trenches and exploratory digs were conducted to insure that all of the hazardous material had been removed.

- Removed barrels were opened and their contents determined. Non-chlorinated, non-water soluble hydrocarbons were shipped for incineration.

- Semi-solid & non-filterable polymers were shipped to a secure chemical landfill in Emelle, Alabama.

- All barrels and contaminated soil were shipped to a secure chemical landfill in Niagara Falls, New York.

Personnel from the Region observed the clean-up operation which reflected modern engineering technology for the removal of buried hazardous waste.

The Region finds that the removal of hazardous waste by Weyerhaueser Company, at a location proximate to James River Company, Mill No. 8, Fitchburg, to have been successfully completed.

I wish also to state that I was very much impressed with your professional expertise and the excellent cooperation you provided during this clean-up operation.

Very truly yours,

Gilbert T. Joly

Gilbert T. Joly, P.E.
Regional Environmental Engineer

JAD:fg

cc: Commissioner Cortese
Dept. of Environmental Quality Engineering
100 Cambridge St., Boston, MA 02202

Deputy Commissioner McLoughlin
Dept. of Environmental Quality Engineering
100 Cambridge St., Boston, MA 02202

Ed Benoit, Hazardous Waste Coordinator
75 Grove St., Worcester, MA 01605

Mr. John Coulter
Board of Health, Fitchburg, MA 01420

Mr. Neil Martin
James River - Massachusetts
Mill #8, Fitchburg, MA 01420

ATTACHMENT C

Memorandum to D. Hannon from M. Gardner. Subject:
MSCA, Preliminary Assessment Package for James River
Massachusetts, Mill #8, Old Princeton Road, Fitchburg, Massachusetts,
MAD # 065777344. June 1, 1987.

MEMORANDUM

TO: Daniel Hannon DJH

THRU: Carol Bois CB

FROM: Mary Gardner MG

DATE: June 1, 1987

SUBJECT: MSCA, Preliminary Assessment Package for James River Massachusetts, Mill #8, Old Princeton Road, Fitchburg, Massachusetts
MAD # 0065777344

I. SITE HISTORY

James River Mass., Mill #8 is located off Old Princeton Road, Fitchburg, Massachusetts. This facility is owned by the James River Corporation, has been in operation since about 1975, and manufactures paper. Prior to 1975, the Weyerhauser Company owned this facility and disposed of chemical wastes contained in 55-gallon drums and solid wastes such as: paper rolls, pallets, roofing materials, wire, sheet metal, on this property. In the fall of 1979, James River discovered that this property had been used to improperly dispose of chemical and solid waste materials.

Upon investigation of this site by State DEQE personnel, it was determined that approximately 1327 (55)-gallon drums of chemical waste were buried in two areas. The location of the solid waste disposal was also determined. A site clean-up began in August, 1980. The hazardous waste such as crushed drums, solidified chemical residues, excavated contaminated soil was removed by a licensed hazardous waste hauler. On November 20, 1980, the Department sent a letter to the Weyerhauser Company verifying that all hazardous waste had been adequately removed from the site.

II. NATURE OF HAZARDOUS MATERIALS, POTENTIAL CONTAMINATION, PATHWAYS AND TARGETS

The hazardous materials which were of concern at this site were buried 55-gallon drums containing non-chlorinated petroleum-based liquids and sludge compounds. Since most of the drums were found intact, no pathways for contaminant migration were thought to exist from past site activities. During excavation of the drums, soil that was suspected to be contaminated was removed. Groundwater was not encountered during excavation and is not suspected to be impacted from the drum burial.

There are no public drinking water supplies within a one-mile radius of this site. There is one private drinking water supply well approximately ½ mile from the site; however, this well would not be adversely impacted from past site activities since no pathway for contaminant migration exists. Snow's Mill Pond abuts the site property but is also not suspected to be affected from past site activities.

III. RECOMMENDATIONS AND JUSTIFICATIONS

This site is currently listed in CERCLIS as a "No Action" site. It is recommended that this site be removed from the "No Action" category and placed in the "Remedial Action Complete" category since the improper disposal of chemical and solid wastes were discovered and the removal of these wastes was completed in September, 1980. It is recommended that this site be given a rating of "none" for additional site inspection work on the EPA Preliminary Assessment Form 2070-12 (attached).

James River Mass., Mill #8 is currently manufacturing paper products and is in the RCRA system as a Generator of Hazardous Waste. Current and future activities at this facility will be tracked by the DEQE, Division of Solid and Hazardous Waste, under M.G.L.c.21C, Regulations for the Division of Hazardous Waste (310 CMR 30.000).

pvr
Attachment

ATTACHMENT D

CLP Analytical Results for Soil Samples Collected
by NUS/FIT from James River Inc. Mill No. 8 on June 11, 1990.

Table 1 - Volatile Organic Analysis

Table 2 - Extractable Organic Analysis

Table 3 - Inorganic Analysis

JAMES RIVER INC. MILL No. 8
JULY 11, 1990
CLP VOLATILE ORGANIC ANALYSIS
SOIL ANALYTICAL RESULTS (ug/Kg)

Sample Location	SS-01	SS-02	SS-02R	SS-03	SS-04	SS-05	SS-06	SS-07	SS-08	SS-09	SS-10
Sample Number	23966	23967	23968	23969	23970	23971	23972	23973	23974	23975	23976
Traffic Report Number	AT162	AT163RE	AT164	AT165	AT166	AT167	AT168RE	AT169	AT170	AT171	AT172
Remarks			REPLICATE							BACKGROUND	BLANK
Sampling Date	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90
Analysis Date	07-20-90	07-21-90	07-21-90	07-20-90	07-19-90	07-20-90	07-21-90	07-19-90	07-19-90	07-20-90	07-23-90
VOLATILE ORGANIC COMPOUND											
Chloromethane											
Bromomethane											
Vinyl Chloride											
Chloroethane											
Methylene Chloride											10 J
[redacted]one											130 J
[redacted]bon Disulfide						7 J					
1,1-Dichloroethene											
1,1-Dichloroethane							7 J				3 J
[redacted]2-Dichloroethene (Total)								6 J			
[redacted]hloroform							2 J				
[redacted]-Dichloroethane											
[redacted]Butanone											17 J
[redacted]1,1-Trichloroethane											
Ca[redacted]bon Tetrachloride											
Vi[redacted]yl Acetate											
Bromodichloromethane											
[redacted]1,2-Dichloropropane											
[redacted]s [redacted]3-Dichloropropene											
[redacted]richloroethene								3 J			
Dibromochloromethane											
[redacted]1,2 Trichloroethane											
[redacted]enzene											
[redacted]-1,3-Dichloropropene											
[redacted]noform											
4 Methyl-2-pentanone											14 J
[redacted]Hexanone											
[redacted]achloroethene		13 J				8 J		6 J			
[redacted]2,2-Tetrachloroethane											
[redacted]oluene											87 J
Chlorobenzene											
Ethylbenzene											3 J
[redacted]yrene											
Xylene (Total)											12 J
Total VOC Concentration (ug/Kg)		13 J				15 J	9 J	15 J			272 J

A blank space indicates the compound was not detected.

Sample results are reported on a dry weight basis.

Quantitation is approximate due to limitations identified during the quality control review.

[redacted]mple Quantitation Limits for the compounds listed above are reported in Attachment E Table 1.

TABLE 2 PAGE 1 OF 3
JAMES RIVER INC. MILL No. 8
JULY 11, 1990
CLP EXTRACTABLE ORGANIC ANALYSIS
SOIL ANALYTICAL RESULTS (ug/Kg)

Sample Location	SS-01	SS-02	SS-02D	SS-03	SS-04	SS-05	SS-06	SS-07	SS-08	SS-09	SS-10
Sample Number	23966	23967	23968	23969	23970	23971	23972	23973	23974	23975	23976
Traffic Report Number	AT162	AT163	AT164	AT165	AT166	AT167	AT168	AT169	AT170	AT171	AT172
Remarks			DUPLICATE							BACKGROUND	BLANK
Sampling Date	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90
Extraction Date	07-23-90	07-23-90	07-23-90	07-23-90	07-23-90	07-23-90	07-23-90	07-23-90	07-23-90	07-23-90	07-23-90
Analysis Date	08-13-90	08-13-90	08-09-90	08-16-90	08-09-90	08-09-90	08-09-90	08-09-90	08-09-90	08-09-90	08-23-90
SEMI-VOLATILE COMPOUND											
Phenol								56 J			
bis (2-Chloroethyl) ether											
2-Chlorophenol											
[redacted]Dichlorobenzene											
[redacted]-Dichlorobenzene											
Benzyl Alcohol											
1,2-Dichlorobenzene											
2-Methylphenol											
bis (2-Chloroisopropyl)ether											
4-Methylphenol											
N-Nitroso-di-n-propylamine											
Hexachloroethane											
Nitrobenzene											
Isophorone											
2-Nitrophenol											
2,4-Dimethylphenol											
Benzoic acid								72 J			
bis (2-Chloroethoxy) methane											
2,4-Dichlorophenol											
1,2,4-Trichlorobenzene											
Naphthalene	260 J	820 J	2500 J			720 J		330 J			
[redacted]loroaniline											
[redacted]achlorobutadiene											
4-Chloro-3-methylphenol											
2-Methylnaphthalene	180 J	410 J	910 J			290 J		120 J			
Hexachlorocyclopentadiene											
2,4,6-Trichlorophenol											
2,4,5-Trichlorophenol											
2-Chloronaphthalene											
2-Nitroaniline											
Dimethylphthalate											
Acenaphthylene		300 J	1200 J					80 J			
2,6-Dinitrotoluene											

TABLE 2 PAGE 2 OF 3
JAMES RIVER INC. MILL No. 8
JULY 11, 1990
CLP EXTRACTABLE ORGANIC ANALYSIS
SOIL ANALYTICAL RESULTS (ug/Kg)

Sample Location	SS-01	SS-02	SS-02D	SS-03	SS-04	SS-05	SS-06	SS-07	SS-08	SS-09	SS-10
Sample Number	23966	23967	23968	23969	23970	23971	23972	23973	23974	23975	23976
Traffic Report Number	AT162	AT163	AT164	AT165	AT166	AT167	AT168	AT169	AT170	AT171	AT172
Remarks			DUPLICATE							BACKGROUND	BLANK
Sampling Date	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90
Extraction Date	07-23-90	07-23-90	07-23-90	07-23-90	07-23-90	07-23-90	07-23-90	07-23-90	07-23-90	07-23-90	07-23-90
Analysis Date	08-13-90	08-13-90	08-09-90	08-16-90	08-09-90	08-09-90	08-09-90	08-09-90	08-09-90	08-09-90	08-10-90
SEMI-VOLATILE COMPOUND											
3-Nitroaniline											
Acenaphthene	770 J	840 J	2400 J			940 J		340 J			
2,4-Dinitrophenol											
[redacted]rophenol											
Dibenzofuran	480 J	1100 J	3200 J			810 J		340 J			
2,4-Dinitrotoluene											
Diethylphthalate											
4-Chlorophenyl-phenylether											
Fluorene	730 J	1600 J	4500 J			1500 J		460 J			
4-Nitroaniline											
4,6-Dinitro-2-methylphenol											
N-Nitrosodiphenylamine											
4-Bromophenyl-phenylether											
Hexachlorobenzene											
Pentachlorophenol				1600 J		9000 J		1000 J			
Phenanthrene	7100 J	11000 J	34000 J	890 J	1200 J	9600 J		3700 J	320 J		
Anthracene	1700 J	3100 J	9400 J		250 J	1900 J		850 J	71 J		
Di-n-butylphthalate											
Fluoranthene	9000 J	12000 J	29000 J	1000 J	1500 J	7000 J		2900 J	380 J		
Pyrene	7900 J	9000 J	33000 J	460 J	1500 J	7800 J		3300 J	350 J		
Butylbenzylphthalate											53 J
[redacted]Dichlorobenzidine											
Benzo(a)anthracene	4100 J	5200 J	16000 J	460 J	800 J	3700 J		1400 J	200 J		
Chrysene	4400 J	4700 J	14000 J	380 J	870 J	3900 J		1400 J	190 J		
bis(2-Ethylhexyl)phthalate											
Di-n-octyl phthalate											
Benzo(b)fluoranthene	4000 J	3700 J	10000 J	370 J	780 J	2600 J		1100 J	140 J		
Benzo(k)fluoranthene		3300 J	9600 J		440 J	1600 J		800 J	140 J		
Benzo(a)pyrene	3700 J	3900 J	12000 J		760 J	2500 J		1100 J	150 J		
Indeno (1,2,3-cd)pyrene	2500 J	2700 J	8100 J		540 J	1900 J		1100 J	110 J		
Dibenz(a,h)anthracene			1500 J			420 J		150 J			
Benzo(g,h,i)perylene	2100 J	2100 J	6900 J		700 J	1400 J		750 J	86 J		

TABLE 2 PAGE 3 OF 3
JAMES RIVER INC. MILL No. 8
JULY 11, 1990
CLP EXTRACTABLE ORGANIC ANALYSIS
SOIL ANALYTICAL RESULTS (ug/Kg)

Sample Location	SS-01	SS-02	SS-02D	SS-03	SS-04	SS-05	SS-06	SS-07	SS-08	SS-09	SS-10
Sample Number	23966	23967	23968	23969	23970	23971	23972	23973	23974	23975	23976
Traffic Report Number	AT162	AT163	AT164	AT165	AT166	AT167	AT168	AT169	AT170	AT171	AT172
Remarks			DUPLICATE							BACKGROUND	BLANK
Sampling Date	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90	07-11-90
Extraction Date	07-23-90	07-23-90	07-23-90	07-23-90	07-23-90	07-23-90	07-23-90	07-23-90	07-23-90	07-23-90	07-23-90
Analysis Date	08-13-90	08-14-90	08-14-90	08-13-90	08-14-90	08-14-90	08-14-90	08-14-90	08-14-90	08-14-90	08-14-90
PESTICIDE/PCB COMPOUND											
alpha-BHC											
beta-BHC											
delta-BHC											
[illegible]ma-BHC (Lindane)											
[illegible]eptachlor											
Aldrin											
Heptachlor epoxide											
Endosulfan I											
Dieldrin											
4,4'-DDE											
Endrin											
[illegible]ndosulfan II											
[illegible]4'-DDD											
[illegible]ndosulfan sulfate											
4,4'-DDT											
Methoxychlor											
Endrin ketone											
alpha-Chlordane											
gamma-Chlordane											
Toxaphene											
Aroclor-1016											
[illegible]clor-1221											
[illegible]roclor-1232											
Aroclor-1242				3100 J							
Aroclor-1248											
[illegible]roclor-1254											
Aroclor-1260											

A blank space indicates the compound was not detected.

Sample results are reported on a dry weight basis.

J Quantitation is approximate due to limitations identified during the quality control review.

Sample Quantitation Limits for the compounds listed above are reported in Attachment B Table 2.

TABLE 3 PAGE 1 OF 1
JAMES RIVER INC. MILL No. 8
JULY 11, 1990
CLP INORGANIC ANALYSIS
SOIL ANALYTICAL RESULTS (mg/Kg)

Sample Location		SS-01	SS-02	SS-02D	SS-03	SS-04	SS-05	SS-06	SS-07	SS-08	SS-09
Sample Number		23966	23967	23968	23969	23970	23971	23972	23973	23974	23975
Traffic Report Number		MAP617	MAP618	MAP619	MAP620	MAP621	MAP622	MAP623	MAP624	MAP625	MAP626
Remarks				DUPLICATE							BACKGROUND
INORGANIC ELEMENTS											
Aluminum	P	5150.00	6720.00	6560.00	7530.00	7390.00	10600.00	15100.00	7880.00	9170.00	5380.00
Antimony	P										
Arsenic	F	7.50 J	8.40 J	8.30 J	7.90 J	6.40 J	7.90 J	9.60 J	7.00 J	7.60 J	4.60 J
Barium	P	73.70	317.00	287.00	197.00	123.00	246.00	390.00	156.00	224.00	13.00
Beryllium	P		0.81	0.68	0.36 J	0.26 J	1.10	2.30	0.73	0.80	
Cadmium	P										
Calcium	P	1590.00	6820.00	6670.00	14500.00	2840.00	19300.00	41600.00	9490.00	16400.00	159.00
Chromium	P	10.00 J	7.60 J	8.00 J	10.90 J	6.40 J	10.60 J	10.00 J	8.50 J	9.50 J	4.10 J
Cobalt	P	2.20	4.20	4.50	5.00	4.10	9.00	11.50	4.70	6.00	0.94 J
Copper	P	42.50	21.50	22.60	21.00	14.40	28.00	34.60	24.20	22.30	1.60
Iron	P	6720.00 J	9720.00 J	9970.00 J	11100.00 J	9890.00 J	14000.00 J	22700.00 J	11600.00 J	13400.00 J	5530.00 J
Lead	F	119.00 J	9.60 J	23.10 J	64.30 J	44.20 J	33.80 J	12.90 J	39.10 J	25.30 J	4.60 J
Magnesium	P	937.00	1080.00	1060.00	1660.00	1030.00	2100.00	3780.00	1730.00	1940.00	575.00
Manganese	P	64.90	72.50	73.30	142.00	101.00	188.00	233.00	113.00	120.00	51.80
Mercury	CV	0.91 J	R	R	0.29 J	0.13 J	0.40 J	R	0.38 J	0.40 J	0 18 J
Nickel	P	8.40	9.00	9.10	17.60	12.50	49.80	22.80	13.30	18.00	1.90 J
Potassium	P	559.00	1270.00	1190.00	937.00	509.00	1460.00	1580.00	1050.00	1230.00	376.00
Selenium	F		2.60 J	1.50 J	2.60 J	1.20 J	2.40 J	1.80 J	1.60 J	1.60 J	
Silver	P										
Sodium	P		271.00	262.00			220.00	295.00		201.00	
Thallium	F										
Vanadium	P	37.70	45.20	45.30	85.60	66.80	92.50	102.00	46.40	86.30	4.80
Zinc	P	275.00 J	88.70 J	120.00 J	1240.00 J	200.00 J	2000.00 J	14.10 J	380.00 J	519.00 J	10.80 J
Cyanide	C	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Analytical Method

F Furnace AA
P ICP/Flame AA
CV Cold Vapor
C Colorimetric

A blank space indicates the element was not detected.

Sample results are reported on a dry weight basis.

J Quantitation is approximate due to limitations identified during the quality control review.

R Value is rejected.

NA Not Analyzed

Sample Detection Limit for the elements listed above are reported in Attachment B Table 3.

ATTACHMENT E

CLP Quantitation Limits and Detection Limits for Soil Samples collected by NUS/FIT from James River Inc. Mill No. 8 on July 11, 1990.

- Table 1 - Volatile Organic Analysis
- Table 2 - Extractable Organic Analysis
- Table 3 - Inorganic Analysis

TABLE 1 PAGE 1 OF 1

JAMES RIVER INC. MILL No. 8

JULY 11, 1990

CLP VOLATILE ORGANIC ANALYSIS

SOIL SAMPLE QUANTITATION LIMITS (ug/Kg)

Sample Location	SS-01	SS-02	SS-02R	SS-03	SS-04	SS-05	SS-06	SS-07	SS-08	SS-09	SS-10
Sample Number	23966	23967	23968	23969	23970	23971	23972	23973	23974	23975	23976
Traffic Report Number	AT162	AT163RE	AT164	AT165	AT166	AT167	AT168RE	AT169	AT170	AT171	AT172
Remarks			REPLICATE							BACKGROUND	BLANK
VOLATILE ORGANIC COMPOUND											
Chloromethane	11	14	14	12	12	67	15	12	12	10	10
Bromomethane	11 UJ	14 UJ	14 UJ	12 UJ	12 UJ	67 UJ	15 UJ	12 UJ	12 UJ	10 UJ	10 UJ
Vinyl Chloride	11	14	14	12	12	67	15	12	12	10	10
Chloroethane	11	14	14	12	12	67	15	12	12	10	10
Methylene Chloride	6	7	7	6	6	33	8	6	6	5	5
Acetone	11	14	14	12	12	67	15	12	12	10	10
[redacted]on Disulfide	6	7	7	6	6	33	8	6	6	5	5
[redacted]-Dichloroethene	6	7	7	6	6	33	8	6	6	5	5
1,1-Dichloroethane	6	7	7	6	6	33	8	6	6	5	5
1,2-Dichloroethene (Total)	6	7	7	6	6	33	8	6	6	5	5
Chloroform	6	7	7	6	6	33	8	6	6	5	5
1,2-Dichloroethane	6	7	7	6	6	33	8	6	6	5	5
2-Butanone	11	14 UJ	14	12	12	67	15	12 UJ	12	10	10
1,1,1-Trichloroethane	6	7 UJ	7	6	6	33	8	6 UJ	6	5	5
Carbon Tetrachloride	6	7 UJ	7	6	6	33	8	6 UJ	6	5	5
Vinyl Acetate	11	14 UJ	14	12	12	67	15	12 UJ	12	10	10
Bromodichloromethane	6	7 UJ	7	6	6	33	8	6 UJ	6	5	5
1,2-Dichloropropane	6	7 UJ	7	6	6	33	8	6 UJ	6	5	5
cis-1,3-Dichloropropene	6	7 UJ	7	6	6	33	8	6 UJ	6	5	5
Trichloroethene	6	7 UJ	7	6	6	33	8	6	6	5	5
Dibromochloromethane	6	7 UJ	7	6	6	33	8	6 UJ	6	5	5
1,1,2-Trichloroethane	6	7 UJ	7	6	6	33	8	6 UJ	6	5	5
Benzene	6	7 UJ	7	6	6	33	8	6 UJ	6	5	5
trans-1,3-Dichloropropene	6	7 UJ	7	6	6	33	8	6 UJ	6	5	5
[redacted]noform	6	7 UJ	7	6	6	33	8	6 UJ	6	5	5
4-[redacted]ethyl-2-pentanone	11	14	14	12	12 UJ	67 UJ	15	12 UJ	12 UJ	10	10
2-Hexanone	11	14	14	12	12 UJ	67 UJ	15	12 UJ	12 UJ	10	10
Tetrachloroethene	6	7	7	6	6 UJ	33	8	6	6 UJ	5	5
1,1,2,2-Tetrachloroethane	6	7	7	6	6 UJ	33 UJ	8	6 UJ	6 UJ	5	5
Toluene	6	7	7	6	6 UJ	33 UJ	8	6 UJ	6 UJ	5	5
Chlorobenzene	6	7	7	6	6 UJ	33 UJ	8	6 UJ	6 UJ	5	5
Ethylbenzene	6	7	7	6	6 UJ	33 UJ	8	6 UJ	6 UJ	5	5
Styrene	6	7	7	6	6 UJ	33 UJ	8	6 UJ	6 UJ	5	5
Xylene (Total)	6	7	7	6	6 UJ	33 UJ	8	6 UJ	6 UJ	5	5

Sample Quantitation Limits are reported on a dry weight basis.

UJ Quantitation Limit is approximate due to limitations identified during the quality control review.

TABLE 2 PAGE 1 OF 3
JAMES RIVER INC. MILL No. 8
JULY 11, 1990
CLP EXTRACTABLE ORGANIC ANALYSIS
SOIL SAMPLE QUANTITATION LIMITS (ug/Kg)

Sample Location	SS-01	SS-02	SS-02D	SS-03	SS-04	SS-05	SS-06	SS-07	SS-08	SS-09	SS-10
Sample Number	23966	23967	23968	23969	23970	23971	23972	23973	23974	23975	23976
Traffic Report Number	AT162	AT163	AT164	AT165	AT166	AT167	AT168	AT169	AT170	AT171	AT172
Remarks			DUPLICATE							BACKGROUND	BLANK
SEMI-VOLATILE COMPOUND											
Phenol	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390	410UJ	340UJ	340UJ
bis (2-Chloroethyl) ether	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
2-Chlorophenol	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
1,3-Dichlorobenzene	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
1,4-Dichlorobenzene	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
Benzyl Alcohol	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
[redacted]Dichlorobenzene	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
[redacted]Methylphenol	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
bis (2-Chloroisopropyl)ether	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
4-Methylphenol	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
N-Nitroso-di-n-propylamine	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
Hexachloroethane	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
Nitrobenzene	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
Isophorone	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
2-Nitrophenol	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
2,4-Dimethylphenol	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
Benzoic acid	8900UJ	11000UJ	11000UJ	19000UJ	8900UJ	11000UJ	2500UJ	1900	2000UJ	1600UJ	1600UJ
bis (2-Chloroethoxy) methane	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
2,4-Dichlorophenol	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
1,2,4-Trichlorobenzene	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
Naphthalene	1800	2200	2300	3900UJ	1800UJ	2200	510UJ	390	410UJ	340UJ	340UJ
4-Chloroaniline	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
Hexachlorobutadiene	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
4-Chloro-3-methylphenol	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
[redacted]ethylnaphthalene	1800	2200	2300	3900UJ	1800UJ	2200	510UJ	390	410UJ	340UJ	340UJ
Hexachlorocyclopentadiene	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
2,4,6-Trichlorophenol	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
2,4,5-Trichlorophenol	8900UJ	11000UJ	11000UJ	19000UJ	8900UJ	11000UJ	2500UJ	1900UJ	2000UJ	1600UJ	1600UJ
2-Chloronaphthalene	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
2-Nitroaniline	8900UJ	11000UJ	11000UJ	19000UJ	8900UJ	11000UJ	2500UJ	1900UJ	2000UJ	1600UJ	1600UJ
Dimethylphthalate	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
Acenaphthylene	1800UJ	2200	2300	3900UJ	1800UJ	2200UJ	510UJ	390	410UJ	340UJ	340UJ
2,6-Dinitrotoluene	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ

TABLE 2 PAGE 2 OF 3
JAMES RIVER INC. MILL No. 8
JULY 11, 1990
CLP EXTRACTABLE ORGANIC ANALYSIS
SOIL SAMPLE QUANTITATION LIMITS (ug/Kg)

Sample Location	SS-01	SS-02	SS-02D	SS-03	SS-04	SS-05	SS-06	SS-07	SS-08	SS-09	SS-10
Sample Number	23966	23967	23968	23969	23970	23971	23972	23973	23974	23975	23976
Traffic Report Number	AT162	AT163	AT164	AT165	AT166	AT167	AT168	AT169	AT170	AT171	AT172
Remarks			DUPLICATE							BACKGROUND	BLANK
SEMI-VOLATILE COMPOUND											
3-Nitroaniline	8900UJ	11000UJ	11000UJ	19000UJ	8900UJ	11000UJ	2500UJ	1900UJ	2000UJ	1600UJ	1600U
Acenaphthene	1800	2200	2300	3900UJ	1800UJ	2200	510UJ	390	410UJ	340UJ	340UJ
2,4-Dinitrophenol	8900UJ	11000UJ	11000UJ	19000UJ	8900UJ	11000UJ	2500UJ	1900UJ	2000UJ	1600UJ	1600UJ
4-Nitrophenol	8900UJ	11000UJ	11000UJ	19000UJ	8900UJ	11000UJ	2500UJ	1900UJ	2000UJ	1600UJ	1600UJ
Dibenzofuran	1800	2200	2300	3900UJ	1800UJ	2200	510UJ	390	410UJ	340UJ	340UJ
2,4-Dinitrotoluene	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
[redacted]hylphthalate	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
4-Chlorophenyl-phenylether	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
Fluorene	1800	2200	2300	3900UJ	1800UJ	2200	510UJ	390	410UJ	340UJ	340UJ
4-Nitroaniline	8900UJ	11000UJ	11000UJ	19000UJ	8900UJ	11000UJ	2500UJ	1900UJ	2000UJ	1600UJ	1600UJ
4,6-Dinitro-2-methylphenol	8900UJ	11000UJ	11000UJ	19000UJ	8900UJ	11000UJ	2500UJ	1900UJ	2000UJ	1600UJ	1600UJ
N-Nitrosodiphenylamine	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
4-Bromophenyl-phenylether	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
Hexachlorobenzene	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
Pentachlorophenol	8900UJ	11000UJ	11000UJ	19000	8900UJ	11000	2500UJ	1900	2000UJ	1600UJ	1600UJ
Phenanthrene	1800	2200	2300	3900	1800	2200	510UJ	390	410	340UJ	340UJ
Anthracene	1800	2200	2300	3900UJ	1800	2200	510UJ	390	410	340UJ	340UJ
Di-n-butylphthalate	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
Fluoranthene	1800	2200	2300	3900	1800	2200	510UJ	390	410	340UJ	340UJ
Pyrene	1800	2200	2300	3900	1800	2200	510UJ	390	410	340UJ	340UJ
Butylbenzylphthalate	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340
3,3'-Dichlorobenzidine	3700UJ	4500UJ	4500UJ	7800UJ	3700UJ	4400UJ	1000UJ	790UJ	820UJ	680UJ	680UJ
Benzo(a)anthracene	1800	2200	2300	3900	1800	2200	510UJ	390	410	340UJ	340UJ
Chrysene	1800	2200	2300	3900	1800	2200	510UJ	390	410	340UJ	340UJ
[redacted]-Ethylhexyl)phthalate	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
Di-n-octyl phthalate	1800UJ	2200UJ	2300UJ	3900UJ	1800UJ	2200UJ	510UJ	390UJ	410UJ	340UJ	340UJ
Benzo(b)fluoranthene	1800	2200	2300	3900	1800	2200	510UJ	390	410	340UJ	340UJ
Benzo(k)fluoranthene	1800	2200	2300	3900UJ	1800	2200	510UJ	390	410	340UJ	340UJ
Benzo(a)pyrene	1800	2200	2300	3900UJ	1800	2200	510UJ	390	410	340UJ	340UJ
Indeno (1,2,3-cd)pyrene	1800	2200	2300	3900UJ	1800	2200	510UJ	390	410	340UJ	340UJ
Dibenz(a,h)anthracene	1800UJ	2200UJ	2300	3900UJ	1800UJ	2200	510UJ	390	410UJ	340UJ	340UJ
Benzo(g,h,i)perylene	1800	2200	2300	3900UJ	1800	2200	510UJ	390	410	340UJ	340UJ

TABLE 2 PAGE 3 OF 3
JAMES RIVER INC. MILL No. 8
JULY 11, 1990
CLP EXTRACTABLE ORGANIC ANALYSIS
SOIL SAMPLE QUANTITATION LIMITS (ug/Kg)

Sample Location	SS-01	SS-02	SS-02R/D	SS-03	SS-04	SS-05	SS-06	SS-07	SS-08	SS-09	SS-10
Sample Number	23966	23967	23968	23969	23970	23971	23972	23973	23974	23975	23976
Traffic Report Number	AT162	AT163	AT164	AT165	AT166	AT167	AT168	AT169	AT170	AT171	AT172
Remarks			DUPLICATE							BACKGROUND	BLANK
PESTICIDE/PCB COMPOUND											
alpha-BHC	44UJ	110UJ	11UJ	94UJ	89UJ	110UJ	12UJ	9.5UJ	10UJ	8.2UJ	8.2U
beta-BHC	44UJ	110UJ	11UJ	94UJ	89UJ	110UJ	12UJ	9.5UJ	10UJ	8.2UJ	8.2U
delta-BHC	44UJ	110UJ	11UJ	94UJ	89UJ	110UJ	12UJ	9.5UJ	10UJ	8.2UJ	8.2U
gamma-BHC (Lindane)	44UJ	110UJ	11UJ	94UJ	89UJ	110UJ	12UJ	9.5UJ	10UJ	8.2UJ	8.2U
Heptachlor	44UJ	110UJ	11UJ	94UJ	89UJ	110UJ	12UJ	9.5UJ	10UJ	8.2UJ	8.2U
Aldrin	44UJ	110UJ	11UJ	94UJ	89UJ	110UJ	12UJ	9.5UJ	10UJ	8.2UJ	8.2U
[redacted]eptachlor epoxide	44UJ	110UJ	11UJ	94UJ	89UJ	110UJ	12UJ	9.5UJ	10UJ	8.2UJ	8.2UJ
[redacted]ndosulfan I	44UJ	110UJ	11UJ	94UJ	89UJ	110UJ	12UJ	9.5UJ	10UJ	8.2UJ	8.2UJ
Dieldrin	89UJ	220UJ	22UJ	190UJ	180UJ	210UJ	25UJ	19UJ	20UJ	16UJ	16UJ
4,4'-DDE	89UJ	220UJ	22UJ	190UJ	180UJ	210UJ	25UJ	19UJ	20UJ	16UJ	16UJ
Endrin	89UJ	220UJ	22UJ	190UJ	180UJ	210UJ	25UJ	19UJ	20UJ	16UJ	16UJ
Endosulfan II	89UJ	220UJ	22UJ	190UJ	180UJ	210UJ	25UJ	19UJ	20UJ	16UJ	16UJ
4,4'-DDD	89UJ	220UJ	22UJ	190UJ	180UJ	210UJ	25UJ	19UJ	20UJ	16UJ	16UJ
Endosulfan sulfate	89UJ	220UJ	22UJ	190UJ	180UJ	210UJ	25UJ	19UJ	20UJ	16UJ	16UJ
4,4'-DDT	89UJ	220UJ	22UJ	190UJ	180UJ	210UJ	25UJ	19UJ	20UJ	16UJ	16UJ
Methoxychlor	440UJ	1100UJ	110UJ	940UJ	890UJ	1100UJ	120UJ	95UJ	100UJ	82UJ	82UJ
Endrin ketone	89UJ	220UJ	22UJ	190UJ	180UJ	210UJ	25UJ	19UJ	20UJ	16UJ	16UJ
alpha-Chlordane	440UJ	1100UJ	110UJ	940UJ	890UJ	1100UJ	120UJ	95UJ	100UJ	82UJ	82UJ
gamma-Chlordane	440UJ	1100UJ	110UJ	940UJ	890UJ	1100UJ	120UJ	95UJ	100UJ	82UJ	82UJ
Toxaphene	890UJ	2200UJ	220UJ	1900UJ	1800UJ	2100UJ	250UJ	190UJ	200UJ	160UJ	160UJ
Aroclor-1016	440UJ	1100UJ	110UJ	940UJ	890UJ	1100UJ	120UJ	95UJ	100UJ	82UJ	82UJ
Aroclor-1221	440UJ	1100UJ	110UJ	940UJ	890UJ	1100UJ	120UJ	95UJ	100UJ	82UJ	82UJ
Aroclor-1232	440UJ	1100UJ	110UJ	940UJ	890UJ	1100UJ	120UJ	95UJ	100UJ	82UJ	82UJ
Aroclor-1242	440UJ	1100UJ	110UJ	940	890UJ	1100UJ	120UJ	95UJ	100UJ	82UJ	82UJ
[redacted]oclor-1248	440UJ	1100UJ	110UJ	940UJ	890UJ	1100UJ	120UJ	95UJ	100UJ	82UJ	82UJ
[redacted]oclor-1254	890UJ	2200UJ	220UJ	1900UJ	1800UJ	2100UJ	250UJ	190UJ	200UJ	160UJ	160UJ
Aroclor-1260	890UJ	2200UJ	220UJ	1900UJ	1800UJ	2100UJ	250UJ	190UJ	200UJ	160UJ	160UJ

Sample Quantitation Limits are reported on a dry weight basis.

UJ Quantitation Limits are approximate due to limitations identified during the quality control review.

TABLE 3 PAGE 1 OF 1

JAMES RIVER INC. MILL No. 8

JULY 11, 1990

CLP INORGANIC ANALYSIS

SOIL SAMPLE DETECTION LIMITS (mg/Kg)

Sample Location		SS-01	SS-02	SS-02D	SS-03	SS-04	SS-05	SS-06	SS-07	SS-08	SS-09
Sample Number		23966	23967	23968	23969	23970	23971	23972	23973	23974	23975
Traffic Report Number		MAP617	MAP618	MAP619	MAP620	MAP621	MAP622	MAP623	MAP624	MAP625	MAP626
Remarks				DUPLICATE							BACKGROUND
Percent Solids		89%	73%	73%	83%	86%	74%	62%	80%	75%	97%
INORGANIC ELEMENTS											
Aluminum	P	6.26	7.61	7.32	6.74	6.52	7.40	9.11	6.86	7.52	5.76
Antimony	P	2.20 UJ	2.62 UJ	2.52 UJ	2.33 UJ	2.25 UJ	2.55 UJ	3.14 UJ	2.37 UJ	2.59 UJ	1.98 UJ
Arsenic	F	0.42	0.53	0.54	0.47	0.44	0.54	0.63	0.49	0.53	0.40
Barium	P	0.43	0.52	0.50	0.47	0.45	0.51	0.63	0.47	0.52	0.40
Beryllium	P	0.22	0.26	0.25	0.23	0.22	0.26	0.31	0.24	0.26	0.20
Cadmium	P	0.43	0.52	0.50	0.47	0.45	0.51	0.63	0.47	0.52	0.40
Calcium	P	11.66	14.17	13.62	12.56	12.14	13.79	16.97	12.78	14.00	10.72
Chromium	P	1.08	1.31	1.26	1.16	1.12	1.28	1.57	1.18	1.30	0.99
Cobalt	P	0.86	1.05	1.01	0.93	0.90	1.02	1.26	0.95	1.04	0.79
Copper	P	0.65	0.79	0.76	0.70	0.67	0.77	0.94	0.71	0.78	0.60
Iron	P	2.59	3.15	3.03	2.79	2.70	3.06	3.77	2.84	3.11	2.38
Lead	P	0.43	0.52	0.50	0.47	0.45	0.51	0.63	0.47	0.52	0.40
Magnesium	P	7.99	9.71	9.33	8.60	8.32	9.45	11.63	8.75	9.59	7.34
Manganese	P	1.51	1.84	1.77	1.63	1.57	1.79	2.20	1.66	1.81	1.39
Mercury	CV	0.10	R	R	0.12	0.09	0.13	R	0.11	0.12	0.08
Nickel	P	1.08	1.31	1.26	1.16	1.12	1.28	1.57	1.18	1.30	0.99
Potassium	P	168.35	204.64	196.79	181.38	175.30	199.15	245.07	184.56	202.21	154.80
Selenium	F	0.65 UJ	0.80	0.81	0.70	0.66	0.80	0.95	0.73	0.80	0.60 UJ
Silver	P	0.85 UJ	1.07 UJ	1.08 UJ	0.94 UJ	0.88 UJ	1.07 UJ	1.27 UJ	0.97 UJ	1.07 UJ	0.80 UJ
Sodium	P	91.10	9.71	9.33	160.00	130.00	9.45	11.63	156.00	9.59	47.30
Thallium	F	0.42	0.53	0.54	0.47	0.44	0.54	0.63	0.49	0.53	0.40
Vanadium	P	0.65	0.79	0.76	0.70	0.67	0.77	0.94	0.71	0.78	0.60
Zinc	P	0.43	0.52	0.50	0.47	0.45	0.51	0.63	0.47	0.52	0.40
Cyanide	C	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Analytical Method

F Furnace AA

P ICP/Flame AA

CV Cold Vapor

C Colorimetric

NOTE: Sample Detection Limits are reported on a dry weight basis.

UJ Sample Detection Limit is approximate due to limitations identified during the quality control review.

R Value is rejected.

NA Not Analyzed